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FOREST STATISTICS FOR MISSISSIPPI

A REPORT OF THE SOUTHERN FOREST SURVEY
William A. Duerr, In Charge



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SOUTHERN FOREST EXPERIMENT STATION

Chas. A. Connaughton, Director

New Orleans, La.

THE SOUTHERN FOREST SURVEY

The Southern Forest Survey, an activity of the Southern Forest Experiment Station, covers the seven States of the Station's territory--Alabama, Arkansas, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas. This Survey is a part of the nation-wide Forest Survey authorized by the McSweeney-McNary Forest Research Act of 1928. Its five-fold purpose is (1) to take inventory of the supply of standing timber and other forest products; (2) to ascertain the rate at which this supply is being increased through growth; (3) to determine the rate at which this supply is being diminished through industrial and local use, and by fire, insects, disease, and other agencies; (4) to estimate the present requirements and the probable future trend in the requirements for timber and other forest products; and (5) to correlate these findings with existing and anticipated economic conditions, in order that policies may be formulated for the effective use of lands suitable for forest production.

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FOREST STATISTICS FOR MISSISSIPPI

This report summarizes the data on forest-land acreage and on standing-timber volume, growth, and drain collected by the Southern Forest Survey in Mississippi in 1946-48. Also presented are some comparisons between the findings of this, the second Forest Survey of the State, and the first Survey, made in 1932-35. An average of 14 years elapsed between the two Surveys, though the interval varied for the different regions of the State (for map, see figure 1):

Survey region	First survey		Second survey		Interval in years
	Started	Finished	Started	Finished	
North	Feb. '32	Apr. '33	Mar. '48	June '48	16
Central	Dec. '34	Apr. '35	Nov. '46	Oct. '47	12
South	Aug. '34	Jan. '35	May '48	July '48	14
Delta	Apr. '32	Aug. '32	July '47	Oct. '47	15
State	Feb. '32	Apr. '35	Nov. '46	July '48	14

These dates apply to the acreage, volume, and growth estimates. Drain records on the second Survey were taken for the year 1946.

Highlights

1. Of 30.3 million acres of land in Mississippi, 16.5 million (54 percent) are forest land. Forest-land acreage has increased 2 percent in the past 14 years. The principal regional changes have been a 16 percent increase in North Mississippi, and a 9 percent reduction in the Delta.

2. Forests of the pine types account for 45 percent of the total forest acreage. The area of these pine forests has fallen off about a fourth in 14 years. Bottomland hardwood forests have been reduced 16 percent; but upland hardwood forests, now amounting to 34 percent of all forests, have more than doubled. The notable extension of the upland hardwood forests has occurred chiefly because of the general preference of wood users for pine and the aggressiveness of hardwoods in many areas.

3. Saw-timber stands comprise 36 percent of the forest acreage; cordwood stands, 39 percent; seedling and sapling stands, 14 percent; and restocking and denuded areas, 11 percent. In the longleaf-slash pine type, whose stands are most heavily weighted toward small sizes, 31 percent of the acreage is restocking or denuded.

4. Basal area of all growing stock averages 68 square feet per acre in saw-timber stands, 37 square feet in cordwood stands, and 14 square feet in other stands. A fourth of the forest has less than 40 percent of reasonably full stocking, and two-thirds of it is less than 70 percent stocked. Cull trees occupy much of the ground not utilized by growing stock--24 percent of the total basal area is in cull trees.

5. Total growing stock is 7.7 billion cubic feet--466 cubic feet per acre of forest land. Hardwood makes up 57 percent of this total. Hardwood predominates in all regions of the State except South Mississippi, where it is one-third of the total. Of all the growing stock, nearly half is in the Central region. Three-tenths of the growing stock in the State is in trees of less than sawlog size.

6. The total growing stock is 10 percent less than it was 14 years ago. Softwood volume is down 20 percent; the hardwood total is essentially unchanged. Among softwoods, loblolly and shortleaf pines are down about 30 percent, while longleaf and slash pines are up more than 40 percent. Among hardwoods, the oaks have increased substantially, but most other species have decreased.

7. The number of small growing-stock trees has increased in 14 years; the number of large trees has decreased. In softwoods, trees of 6-inch diameter are up one-fifth in numbers, 8-inch trees are little changed, and 10-inch and larger trees are down, the percentage decline increasing steadily with tree diameter to more than 60 percent in 26-inch and larger trees. In hardwoods, the story is much the same as in softwoods, except that the breaking point occurs at 16 inches instead of 8 inches, while smaller trees have increased more aggressively and larger trees declined less rapidly.

8. Total growing stock in North Mississippi is down 26 percent since the first Forest Survey; in the Delta, down 18 percent; in Central Mississippi, down 8 percent; and in South Mississippi, up 11 percent.

9. In addition to growing stock, there are 1.6 billion cubic feet of sound, usable wood in tops and limbs of hardwood sawlog trees, and 2.3 billion in cull trees, mostly hardwood. The volume of hardwood cull trees has increased 22 percent in the past 14 years.

10. Sawlog growing stock totals 29.3 billion board feet and averages 1,776 board feet per acre of forest land. Hardwoods account for 58 percent of the total: red oaks, 14 percent; sweetgum, 11 percent; white oaks, 9 percent; other hardwoods, 24 percent. Softwoods make up 42 percent of the total: loblolly pine, 20 percent; shortleaf pine, 9 percent; other softwoods, 13 percent.

11. The sawlog growing stock is concentrated in the smaller diameter trees. Of the softwood total, 43 percent is in 10- and 12-inch trees, 43 percent in 14-, 16-, and 18-inch trees, and 14 percent in larger trees. Of the hardwood total, two-thirds is in trees smaller than 20 inches.

12. The sawlog growing stock is 24 percent less than it was 14 years ago. Softwood sawlog volume has fallen off 29 percent; hardwood, 20 percent. In North Mississippi, sawlog growing stock is down 40 percent; in the Delta, down 29 percent; in the Central region, down 25 percent; and in South Mississippi, up 3 percent.

13. Of the entire hardwood sawlog volume, two-thirds is in grade 3 logs. A fourth is in grade 3 logs in stands where no higher-grade logs occur. Of the softwood sawlog growing stock, 62 percent is in grade 3 trees.

14. Drain on total growing stock was 554 million cubic feet in 1946, four-fifths of it in trees of sawlog size. This drain was about equally divided between hardwood and softwood species. Cutting of sawlogs accounted for 51 percent of the total drain; pulpwood and fuel wood each about 15 percent; hewn ties, 5 percent; and all other items, 14 percent.

15. Drain on sawlog growing stock was 2.5 billion board feet in 1946. Well over half of this drain occurred in Central Mississippi.

16. Current annual growth of the total growing stock averages 32 cubic feet per acre of forest land. Nearly two-thirds of total growth is in hardwood trees, and more than two-thirds of this is in trees of cordwood size. Growth of the sawlog growing stock averages 110 board feet per acre per year.

17. Private holdings include nine-tenths of the forest land. Farmers own 42 percent; and businessmen, housewives, wage earners, and professional workers, 31 percent. Forest-products manufacturers hold most of the remaining private forest resources: 14 percent of the forest acreage and 18 percent of the timber growing stock.

18. These are the major changes by Survey region in forest-land area and growing-stock volume since the Forest Survey of 1932-35:

Survey region	Forest land area	Total growing stock	Sawlog growing stock
----- Percent -----			
North	+16	-26	-40
Central	+ 2	- 8	-25
South	- 3	+11	+ 3
Delta	- 9	-18	-29
State	+ 2	-10	-24

The Forest Resource

Some 16.5 million acres out of a total of about 30.3 million in Mississippi—54 percent—are forest land ^{1/} (table 1). Forest-land acreage has increased 2 percent in the 14 years since the first Forest Survey of the State. ^{2/}

Table 1.—Land use in Mississippi

Use	Area
	<u>Thousand acres</u>
Forest	16,532.5
Farm land not in forest	12,669.5
Other nonforest	<u>1,146.8</u>
All uses	30,348.8

The extent of forests varies considerably among the regions of the State. Forest land comprises 77 percent of the total land area in South Mississippi, 58 percent in Central Mississippi, 44 percent in the North, and 37 percent in the Delta. Nevertheless, except for the Delta, wherein the proportion of forest varies widely by counties, the forest is fairly well distributed within each region. ^{3/}

Regionally, the chief changes in forest-land acreage since the first Survey have been a 9 percent decrease in the Delta and a 16 percent increase in the North (table 2). In the Delta, forest land has been cleared for large-scale agriculture. In the North, extensive areas of eroded farm lands have reverted to forest.

Table 2.—Forest-land acreage by Survey region, 1946-48

Survey region	Forest land	Change since 1932-35
	<u>Thousand acres</u>	<u>Percent</u>
North	3,722.9	+16
Central	6,020.0	+ 2
South	4,746.4	- 3
Delta	<u>2,043.2</u>	<u>- 9</u>
State	16,532.5	+ 2

All but 24,000 acres of the 16.5 million acres of forest land are commercial; i.e., they are suitable and available for growing merchantable timber.

^{1/} Definitions of terms will be found at the back of this report, page 64.

^{2/} For a discussion of the estimates of change, see page 22.

^{3/} Detailed statistics on 1946-48 acreage—as well as on volume, growth, and drain will be found in the body of tables beginning on page 24.

Hardwood forest types have increased

The loblolly-shortleaf pine type makes up almost one-third of the total forest acreage, and the longleaf-slash pine type, 13 percent (for type map, see figure 2). The combined extent of these pine types is 7.4 million acres; this is considerably less than the 9.6 million acres they covered at the time of the 1932-35 Survey. Apparently the chief factor involved in this change has been the preference of loggers for pines, which has resulted in converting many pine stands (with hardwoods in mixture) into hardwood and hardwood-pine stands. From all sources, including land abandonment in the North, the upland hardwood and upland hardwood-pine types have more than doubled in area since 1932-35 (table 3).

Table 3. Commercial forest-land acreage by forest type, 1946-48

Forest type	Forest land	Change since 1932-35
	<u>Thousand acres</u>	<u>Percent</u>
Loblolly-shortleaf pine	5,174.3	-21
Longleaf-slash pine	2,201.4	-29
Cedar	51.8	(1/)
Bottomland hardwood	3,388.4	-16
Upland hardwood)	1,928.9	+122
Upland hardwood-pine)	3,764.1	
All types	16,508.9	+ 2

1/ Not significant.

Stand sizes not well balanced

Mississippi's forest stands--10 percent large saw timber, 26 percent small saw timber, 39 percent cordwood, 14 percent seedling and sapling, and 11 percent restocking and denuded--have a disproportionately large part of their area in small trees.

Comparison of the major forest types shows the longleaf-slash pine type, with 1 percent of its area in large saw timber and 31 percent restocking and denuded, to be the most poorly balanced in stand size. However, none of the forest types has a size distribution that can be considered well balanced. Geographically, North and South Mississippi have stands most heavily weighted to small sizes. The loblolly-shortleaf pine type occurs in smaller stand-size classes in the North than elsewhere. The longleaf-slash pine, upland hardwood, and upland hardwood-pine types all occur in the smallest stands in the South. The stand-size distribution of the upland hardwood type, particularly, is excessively distorted in the South region: 76 percent of its area is classed as restocking or denuded.

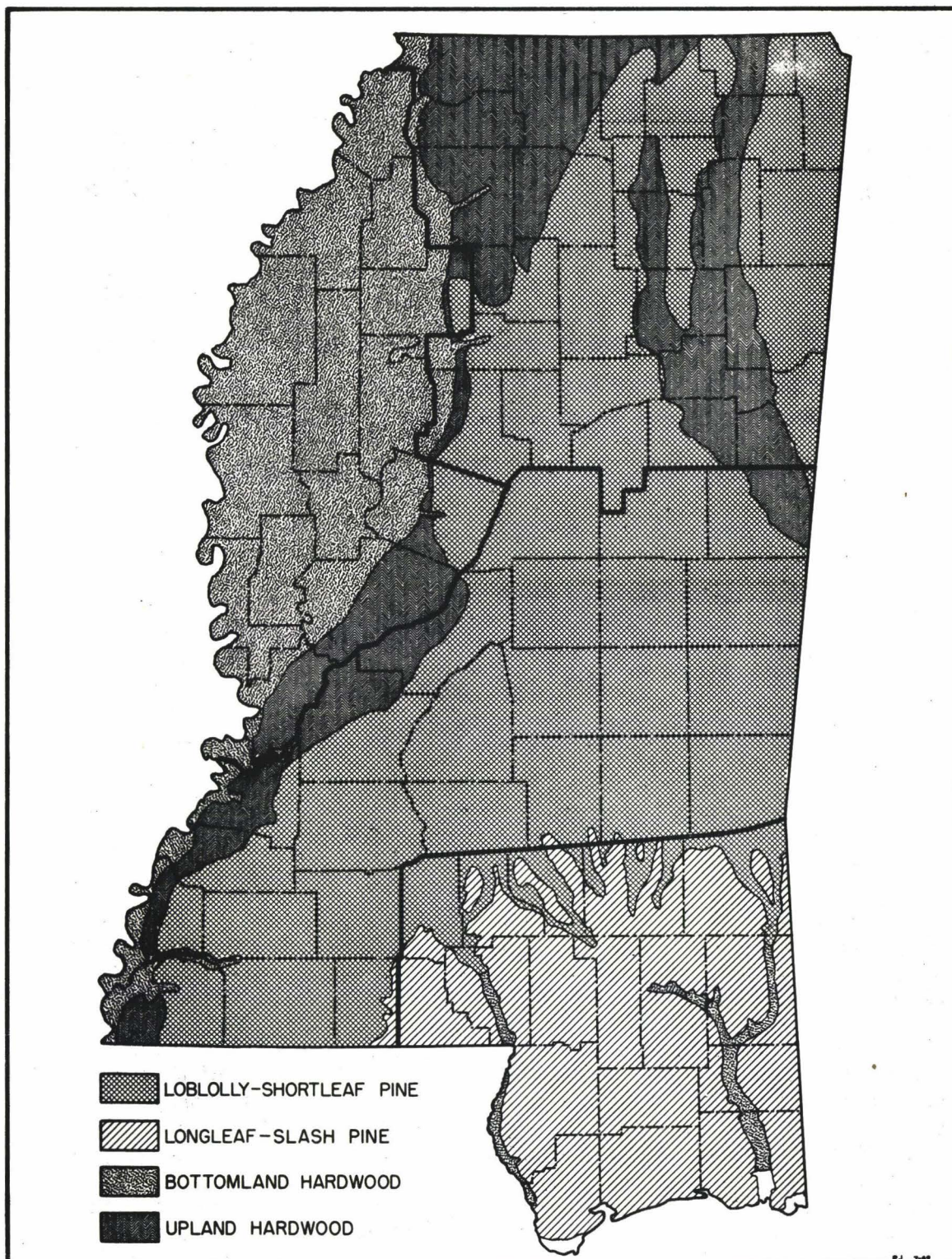


Figure 2.--Generalized forest types in Mississippi. The cedar and upland hardwood-pine types are not concentrated enough to be shown.

Much forest land poorly stocked

Tree stocking throws light on how well the forest is utilizing the growth capacity of forest soils. More than a fourth of Mississippi's forest land has less than 40 percent of the number of growing-stock trees required for full stocking. Partial stocking --40 to 70 percent of full stocking--on another 40 percent of the forest also limits the contribution to potential timber growth on much of this area. Viewed as an industrial plant, a large portion of Mississippi's forest land has been shut down. Its productive equipment needs extensive repairs.

Tree stocking in none of the regions deviates markedly from the State averages, except in the South, where the longleaf-slash pine type is concentrated (figure 3). Here, extensive cut-over lands have failed to restock to more than a scattering of trees. The longleaf-slash pine type is poorly stocked on 35 percent of its area, nonstocked on 21 percent. Other forest types do not vary much from State averages.

The generally poor stocking of Mississippi's forests is emphasized by the statistics on basal area per acre. Basal area of growing stock, which is the cross-sectional area of trees at breast height, averages 68 square feet per acre in saw-timber stands, 37 square feet in cordwood stands, and 14 square feet in other stands. Stand size for stand size, it is virtually the same in softwood types, bottom-land hardwoods, and upland-hardwood types.

How deficient these basal areas of growing-stock trees are may be surmised from the knowledge that the average stand, if fairly well stocked under good management, would have a basal area of about 90 square feet per acre in saw-timber stands and 80 in cordwood stands. This would indicate that only three-fourths of the growing space is being used by growing-stock trees in saw-timber stands and not quite one-half in cordwood stands.

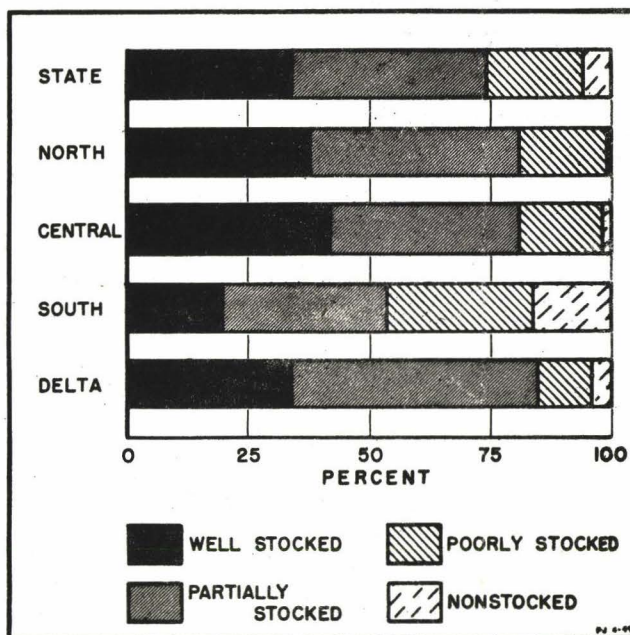


Figure 3.--Tree stocking in commercial forests by Survey region, 1946-48

Part of the basal-area deficit in Mississippi's forests is due simply to lack of trees, especially in stands below saw-timber size. A goodly portion of it, however, is due to the fact that much of the growing space is occupied by cull trees. The basal area of cull trees is one-fourth of the total basal area of all trees in Mississippi. The cull element is almost one-third of the total basal area in the North, South, and Delta, and 16 percent in the Central region. This waste of growing space is particularly heavy in hardwood types (table 4).

Table 4.--Proportion of total basal area in cull trees, 1946-48

Forest type	State	North	Central	South	Delta
	Percent				
Loblolly-shortleaf pine and longleaf-slash pine	14	18	12	18	15
Bottomland hardwood	34	39	24	50	33
Upland hardwood and upland hardwood-pine	27	35	20	39	24
All types ^{1/}	24	31	16	31	31

^{1/} Includes cedar type.

Total growing stock has dropped

Total growing stock ^{4/} amounts to 7.7 billion cubic feet, or 466 cubic feet per acre of commercial forest land. The softwood total is 3.3 billion; the hardwood, 4.4 billion (table 5). Hardwood

Table 5.--Total growing stock by Survey region, 1946-48

Survey region	All species	Softwood	Hardwood
Million cubic feet			
North	1,189.1	370.4	818.7
Central	3,784.1	1,718.4	2,065.7
South	1,681.6	1,114.6	567.0
Delta	1,037.5	127.5	910.0
State	7,692.3	3,330.9	4,361.4

volume predominates in all regions except South Mississippi, where it is one-third of the total. Hardwoods make up nearly 90 percent of the total volume in the Delta, 68 percent in the North, and 55 percent in the Central region.

^{4/} All references to volume in this report are to net volume.

The ratio of cordwood-tree to sawlog-tree growing stock is nearly 1 to 2 among softwood species and 2 to 3 in hardwood species (figure 4). The largest proportion of cordwood-tree to sawlog-tree volume is found in the North.

Important changes have occurred in total growing stock since 1932-35. The decline for all timber is 10 percent, but the real significance of this decline lies in the sizes and species of timber which have been cut most heavily (figure 5). The volume of cordwood trees of softwood species has increased 8 percent, but sawlog trees have been cut so heavily that the net decline of softwood species is 20 percent. Hardwood growing-stock volume remains unchanged, at least partly because much of the growing space made available by the logging of pines has filled in with hardwood species. Yet even among hardwoods, the volume in sawlog trees has been cut back 18 percent.

These changes in sawlog and cordwood trees are shown in table 6. In softwoods, depletion has occurred in 10-inch trees, and the rate of depletion goes up rapidly with increase in tree size. Eight-inch trees have barely increased in number since the first Survey, so that the 8 percent increase in softwood cordwood tree volume has actually occurred almost entirely in 6-inch trees. In hardwoods, depletion occurs in 16-inch trees and the rate also goes up rapidly with increase in tree size. Smaller tree sizes have gained in numbers, particularly in the 6- and 8-inch classes.

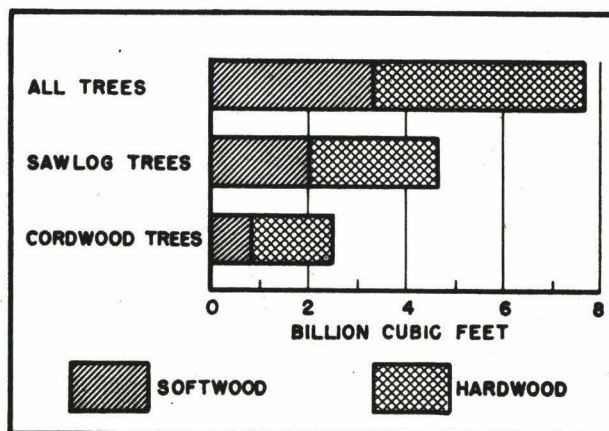


Figure 4.--Total growing stock in cordwood and sawlog trees, 1946-48.

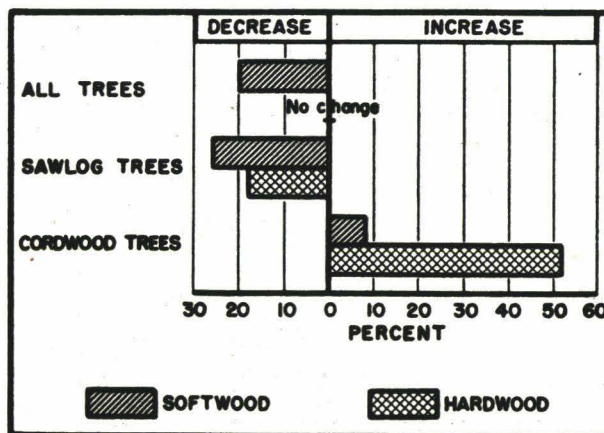
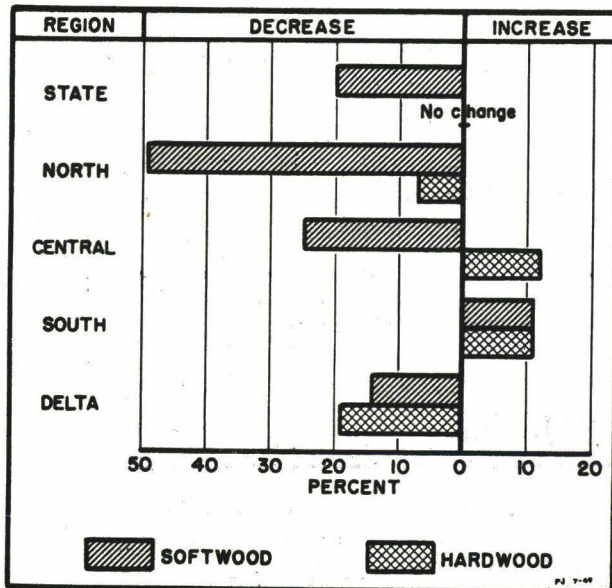


Figure 5.--Change in total growing stock in cordwood and sawlog trees between 1932-35 and 1946-48.

Table 6.--Change in the number of growing-stock trees by tree-diameter class between 1932-35 and 1946-48

D.b.h. class (inches)	All species	Softwood	Hardwood
----- Percent -----			
6	+30	+19	+44
8	+33	+ 1	+66
10	+16	- 4	+32
12	+ 6	- 5	+15
14	+ 8	- 4	+15
16	- 4	- 8	- 2
18	-10	-21	- 7
20	-26	-42	-21
22	-30	-48	-25
24	-42	-58	-39
26 and up	-46	-67	-41

Since the Forest Survey of 1932-35, timber cutting has had its greatest impact on the stands of the North region. Here, total softwood growing stock has been cut virtually in half; hardwood is down 7 percent (figure 6). In the Central region, softwood is down one-fourth. Much of this decline has been offset by hardwood replacement. In the Delta, total growing stock has dropped 18 percent. Only in the South has there been a net increase, amounting to 11 percent.



Loblolly pine, comprising 19 percent of total growing stock, is the leading softwood species. Shortleaf pine follows with 12 percent of the volume. All other softwoods add up to 12 percent. Among hardwoods, sweetgum leads with 12 percent of the total volume. The various red oaks add up to 13 percent; white oaks add up to 9 percent. All other hardwoods, including a wide variety of species, make up 23 percent of the total growing stock (table 7).

Figure 6.--Change in total growing stock by Survey region between 1932-35 and 1946-48.

Table 7.--Total growing stock by species, 1946-48

Species	Total growing stock	Change since 1932-35
	Million cubic ft.	Percent
Softwood:		
Loblolly pine	1,427.4	-27
Shortleaf pine	935.3	-36
Longleaf pine	384.9)	+43
Slash pine	308.2)	
Other pine	102.9)	+ 5
Other softwood	172.2)	
All softwood	3,330.9	-20
Hardwood:		
Red oaks	1,003.5	+25
White oaks	702.6	+13
Sweetgum	900.0	+ 1
Black and tupelo gums	355.8	-26
Other hardwood	1,399.5	-10
All hardwood	4,361.4	0
All species	7,692.3	-10

The 20 percent decline in softwood total growing stock since the first Survey is accounted for largely by two species--shortleaf and loblolly pines. Longleaf and slash pines, in fact, have increased in total growing stock by making a large ingrowth into under-sawlog sizes. Total hardwood growing stock has not changed. Although red and white oaks have increased substantially, black and tupelo gums and other hardwoods have declined.

Total growing stock in loblolly-shortleaf pine stands averages 578 cubic feet per acre, some 80 percent more volume than in the longleaf-slash pine type (315 cubic feet). The bottomland hardwood type averages 565 cubic feet per acre, as compared with 387 cubic feet in the upland hardwood type and 357 cubic feet in the upland hardwood-pine type.

Total growing stock per acre is highest in the Central region (an average of 630 cubic feet). The North and South regions are the most poorly wooded, both regions having less than 400 cubic feet of total growing stock per acre.

Non-growing stock a large portion of total timber

The volume of sound wood in hardwood tops and large limbs to a 4-inch diameter is equal to one-fifth of the total hardwood timber volume in Mississippi (table 8). Although usually left to rot in the

Table 8.--Total volume by class of timber, 1946-48

Species group	All sound wood	Growing stock	Hardwood tops and limbs	Cull trees
-----Million cubic feet-----				
Softwood	3,443.1	3,330.9	..	112.2
Hardwood	8,111.4	4,361.4	1,558.6	2,191.4
All species	11,554.5	7,692.3	1,558.6	2,303.6

woods when cut, hardwood tops and limbs have declined 12 percent in volume since the first Forest Survey. This is explained by the fact that hardwood sawlog trees, which contain the tops and limbs inventoried, have declined sharply in volume since the first Forest Survey.

Sound volume in cull trees is a potential but largely unused resource. Volume in hardwood cull trees is equal to approximately a fourth of the total sound hardwood timber volume. Since new recruits are added regularly to the number of cull trees, but few of the culls are utilized even for fuel wood, the sound volume of this resource has increased 22 percent since the first Survey. The sound volume of cull softwood trees is little more than 3 percent of the total softwood volume.

Sawlog volume down one-fourth

Sawlog growing stock totals 29.3 billion board feet and averages 1,776 board feet per acre. ^{5/} Of the total, 16.9 billion board feet (58 percent) are hardwood. Hardwoods predominate in all

Table 9.--Sawlog growing stock by Survey region, 1946-48

Survey region	All species	Softwood	Hardwood
-----Million board feet-----			
North	3,931.4	1,108.0	2,823.4
Central	14,013.8	6,323.4	7,690.4
South	6,470.0	4,338.5	2,131.5
Delta	4,912.8	609.2	4,303.6
State	29,328.0	12,379.1	16,948.9

regions except South Mississippi (table 9). The proportions of hardwood and softwood sawlog volume are very similar to the proportions in total growing stock.

^{5/} All board-foot volumes quoted in this report are net volumes by the International 1/4-inch log rule. Volume calculated by the Doyle log rule would total about two-thirds as much for the State.

The sharp decline in sawlog volume since 1932-35 is illustrated in figure 7. The toll of logging has been extremely heavy in the North, where the sawlog volume of softwoods has dropped 57 percent, and even the generally less desired hardwoods have dropped 30 percent in sawlog volume. In the Central region, softwood sawlog volume has gone down 36 percent; and in the Delta, hardwood sawlog volume has dropped 30 percent. Only in the South has a sharp decline been avoided. Here, total sawlog volume has increased 3 percent. This is apparently due to a relatively large proportion of ingrowth of small trees to sawlog size on areas from which most of the sawlog volume had been removed previous to the first Forest Survey. For Mississippi as a whole, sawlog volume of softwoods has dropped 29 percent; and of hardwoods, 20 percent.

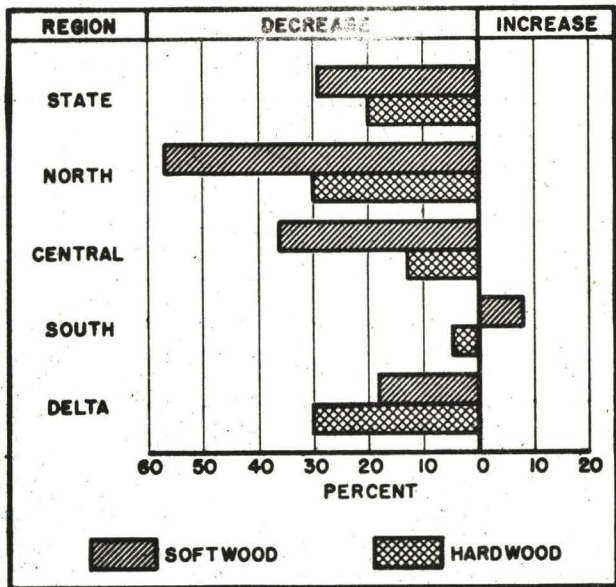


Figure 7.--Change in sawlog growing stock by Survey region between 1932-35 and 1946-48.

Sawlog volume is concentrated in the smaller tree sizes (table 10). Softwoods have 43 percent of their volume in 10- and 12-inch trees and 43 percent in 14-, 16-, and 18-inch trees. Only 14 percent of the softwood volume is in trees above 18 inches. Hardwood sawlog trees tend to be larger than softwood, but only one-third of the hard-

Table 10.--Distribution of sawlog volume by tree diameter class, 1946-48

D.b.h. class (inches)	All species	Softwood	Hardwood
----- Million board feet -----			
10 - 12	8,238.5	5,276.5	^{1/} 2,962.0
14 - 18	13,834.9	5,300.9	8,534.0
20 - 24	5,022.2	1,291.5	3,730.7
26 and up	2,232.4	510.2	1,722.2
All classes	29,328.0	12,379.1	16,948.9
<u>^{1/} 10-inch hardwoods not included in sawlog volume.</u>			

wood total is in tree sizes above 18 inches. These generalizations apply to most of the State, but several regional differences are worth noting. In South Mississippi, only 7 percent of the softwood volume is in trees larger than 18 inches d.b.h. In the Delta, 42 percent of the hardwood volume and 60 percent of the softwood volume are in these larger trees.

The present concentration of sawlog volume in small trees points up another important change which has occurred since 1932-35. Not only has the total sawlog volume declined sharply, but the decline has been chiefly in larger trees (figure 8).

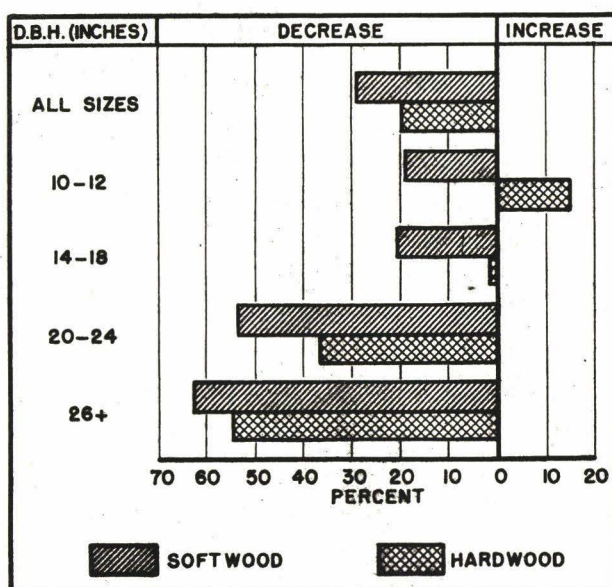


Figure 8.—Change in sawlog growing stock by tree diameter class between 1932-35 and 1946-48.

Distribution of sawlog growing stock among species is much the same as the distribution of total growing stock (table 11). Loblolly pine makes up 20 percent of the sawlog volume; shortleaf pine, 9 percent; all other softwoods, 13 percent. Among hardwoods, sweetgum is the leading single species, with 11 percent of the sawlog volume. Red oaks add up to 14 percent; white oaks, 9 percent. All other hardwoods account for 24 percent of the total.

Table 11.—Sawlog growing stock by species, 1946-48

Species	Sawlog growing stock	Change since 1932-35
	Million board feet	Percent
Softwood:		
Loblolly pine	5,734.7	-34
Shortleaf pine	2,785.4	-48
Longleaf pine	1,431.5)	+31
Slash pine	1,157.2)	
Other pine	454.3)	- 2
Other softwood	816.0)	
All softwood	12,379.1	-29
Hardwood:		
Red oaks	4,223.2	+ 6
White oaks	2,525.8	-13
Sweetgum	3,112.7	-29
Black and tupelo gums	1,262.1	-41
Other hardwood	5,825.1	-26
All hardwood	16,948.9	-20
All species	29,328.0	-24

Few tree species have gained enough in sawlog volume to overcome the heavy toll on them since the first Forest Survey. Slash and longleaf pines, which had been reduced to a sawlog volume of less than 2 billion board feet at the time of the first Survey, have gained 31 percent in sawlog volume. Red oaks have gained 6 percent; but all other important species, both softwood and hardwood, have declined, most of them quite sharply.

The portion of sawlog volume occurring in stands below saw-timber size is 18 percent for the State, and varies from 11 percent in the Central region to 34 percent in the North.

Sawlog volume in large saw-timber stands averages some 4,200 board feet per acre. This is but 7 percent greater than the volume in small saw-timber stands, and can be explained partly by the relatively poor stocking of sawlog trees in the larger stands. The average for all cordwood stands is some 700 board feet per acre. In view of present cutting practices, it is plain that some of the cordwood area contains sawlog trees in sufficient concentration to be considered merchantable for sawlogs. This is particularly true because cordwood areas in small tracts are frequently intermixed with saw-timber areas on the same properties. Nevertheless, in most of the forest classed as cordwood or seedling and sapling, the sawlog volume is not yet merchantable.

The loblolly-shortleaf pine type (2,013 board feet) averages three-fourths more volume than the longleaf-slash pine type (1,143 board feet), and the bottomland hardwood type (2,503 board feet) averages four-fifths more volume than the upland hardwood and upland hardwood-pine types (1,389 board feet). For most of the types, volume per acre shows up best in the Central region. The North has the least volume per acre of all the regions for the loblolly-shortleaf pine type (1,021 board feet) and the bottomland hardwood type (1,591 board feet). The South has the least volume for the longleaf-slash pine type (1,102 board feet), the upland hardwood-pine type (843 board feet), and the upland hardwood type (328 board feet).

Sawlog quality poor

The quality of hardwoods is at the low point where more than 60 percent of the hardwood sawlog timber is in grade 3 logs in each of Mississippi's four regions. The proportion of this low-grade hardwood for the whole State is 66 percent (figure 9).^{6/} Much of this timber is barely accessible economically. The 24 percent of the total hardwood sawlog volume which is in grade 3 logs occurring in poor stands (stands in which no grade 2 or better trees or logs occur) is on the margin, so far as value is concerned, for sawlogs, cooperage bolts, hewn ties, and other hardwood products.

^{6/} The low grade of much of Mississippi's timber is due to the prevailing small sizes of trees. Many trees, if permitted to grow to larger sizes, will develop into higher-grade timber.

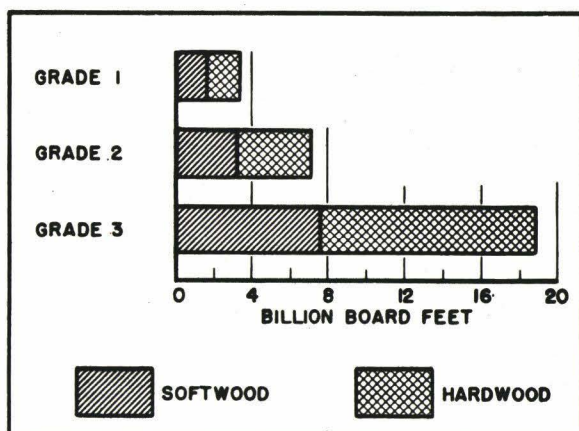


Figure 9.--Sawlog volume by log and tree grade, 1946-48.

Although grade is not so important among softwoods in its effect on economic accessibility, grade does affect softwood timber values considerably. It is significant, therefore, that 62 percent of the softwood sawlog volume is in grade 3 trees, most of it occurring in poor stands. Regionally, the range in the proportion of sawlog volume in grade 3 trees is from 56 percent in the Central region to 70 percent in South Mississippi.

Sawlog quality is low in all forest types. More than one-third of the saw-timber area of every forest type, except bottomland hardwood, has no grade 2 or better hardwood logs or softwood trees present; and in bottomland hardwood, the proportion of poor quality is very close to a third.

Drain continues high

Despite the already heavy depletion of the forest resource, timber drain continues high. Drain is heaviest in trees of sawlog size, although cordwood trees now provide some 20 percent of the total drain.

Drain on the forest resource for different commodities is diagrammed in figure 10. Sawlogs for lumber are, by far, the most important single source of drain. They make up 51 percent of the total drain of 544 million cubic feet. Pulpwood and fuel wood each comprise 15 percent of the total; hewn ties, 5 percent; all other products, 14 percent. Drain on sawlog trees alone differs chiefly in that sawlogs for lumber make up 62 percent of the total; pulpwood, 5 percent, and fuel wood, 10 percent.

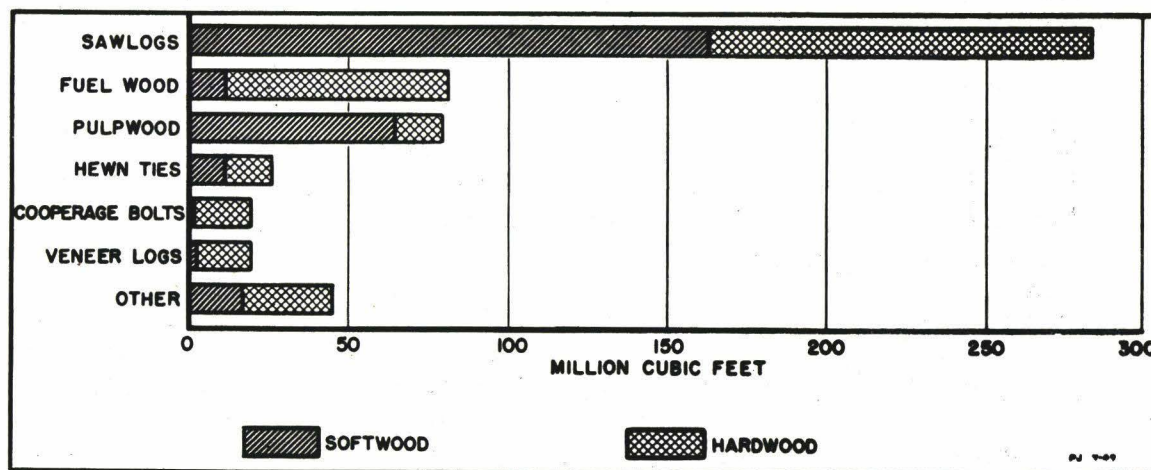


Figure 10.--Drain on total growing stock by commodity, 1946.

Drain by species group is roughly in proportion to standing timber volume, except that softwoods are cut somewhat more heavily, and hardwoods more lightly. Virtually half of the drain on total growing stock is in softwoods, 20 percent in oaks, 11 percent in sweetgum, and 20 percent in other hardwoods.

More than half of the total drain in Mississippi is from the Central region. South Mississippi accounts for 19 percent; North, 19 percent; the Delta, 11 percent (table 12). The proportions for sawlog drain, which totals 2,536 million board feet, are almost the same. So far as standing timber is indicative of the volume available in each region for cutting, these are about the proportions of drain to be expected.

Table 12.--Drain on growing stock by Survey region, 1946

Survey region	Total growing stock			Sawlog growing stock		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Million cubic feet			Million board feet		
North	105.6	31.8	73.8	491.1	151.8	339.3
Central	280.7	159.3	121.4	1,312.1	687.0	625.1
South	106.6	73.3	33.3	446.8	280.8	166.0
Delta	60.7	5.2	55.5	286.5	22.9	263.6
State	553.6	269.6	284.0	2,536.5	1,142.5	1,394.0

Growth weighted toward hardwood species

The estimates of timber growth apply to a different year than drain. Consequently, the growth and drain estimates for Mississippi are not strictly comparable. The growth estimates would have to be adjusted for changes in inventory before they could be compared with the drain estimates. Such an adjustment has not been made because it is felt that comparisons between the inventories of the two Forest Surveys are far more useful and indicative of the forest situation than any growth-drain comparison for a single year.

Growth statistics are presented here as an index of the various species, sizes, and types of new timber that are coming into the growing stock in each region and, in per-acre form, as an index of forest productivity.

The total annual net growth of timber in Mississippi is 529 million cubic feet (table 13). Nearly two-thirds of the total is in hardwood species. In all regions except South Mississippi, total hardwood growth is substantially greater than softwood growth. More than one-half of the total growth (273 million cubic feet) is in cordwood trees; and in hardwood, characterized in many areas by heavy

stands of small trees that are entering cordwood size, the growth of the cordwood trees exceeds that of the sawlog trees by more than 2 to 1. The relatively aggressive total growth of small hardwood as compared with small pine is one of the notable features of the forest situation in the State.

Growth in sawlog growing stock amounts to 1,816 million board feet and is nearly balanced between softwood and hardwood species. Softwood sawlog growth is greater in the Central and South regions, but it is considerably less than hardwood growth in the North and quite small in the Delta.

Table 13.--Current annual net growth by Survey region, 1946-48

Survey region	Total growing stock			Sawlog growing stock		
	All species	Soft-wood	Hard-wood	All species	Soft-wood	Hard-wood
	Million cubic feet			Million board feet		
North	105.9	22.9	83.0	231.2	86.7	144.5
Central	265.6	109.0	156.6	933.7	504.5	429.2
South	89.2	57.4	31.8	401.5	292.9	108.6
Delta	68.0	3.5	64.5	250.1	17.0	233.1
State	528.7	192.8	335.9	1,816.5	901.1	915.4

Current annual growth per acre is 32 cubic feet of total growing stock, 110 board feet of sawlog volume. Softwood types grow more wood per acre, both in total growing stock and sawlog volume, than do hardwood types (table 14). Regionally, the exceptions are the North, where total growing stock grows about the same volume per acre in all types, and the Delta, where sawlog growth is greater in hardwood types than in softwood.

The fairly meager average growth of 110 board feet per acre reflects the smallness and partial stocking of many of Mississippi's timber stands. However, softwood saw-timber stands grow an average of 251 board feet per acre, and hardwood saw-timber stands grow 164 board feet.

Table 14.--Current annual net growth per acre by forest-type group, 1946-48

Forest-type group	Total growing stock	Sawlog growing stock
	Cubic feet	Board feet
Softwood	36	132
Hardwood	29	92
All types	32	110

Forest resource largely in private ownership

The dominant classes of forest landowners are farmers, with 42 percent of the forest, and the group of businessmen, housewives, wage earners, and professional workers, with 31 percent of the forest. These big groups of owners, numbering many thousands of individuals, control the bulk of Mississippi's timber. They hold about two-thirds of the growing stock (table 15).

Table 15.—Commercial forest land and growing stock by class of owner, 1946-48

Class of owner	Forest land	Total growing stock	Sawlog growing stock
	<u>Million acres</u>	<u>Billion cubic feet</u>	<u>Billion board feet</u>
Farmer	7.0	3.0	10.6
Businessman, housewife, wage earner, and professional worker	5.1	2.2	8.5
Forest-products industry	2.3	1.4	5.4
Other private	.4	.2	.7
Public	1.7	.9	4.1
All owners	16.5	7.7	29.3

Among private holdings, the forest-products industries have the largest timber. With 14 percent of the commercial forest land, forest-products industries own 18 percent of the growing stock and sawlog volume. Pulp companies, in fact, have a larger proportion of their forest stands in saw-timber sizes--55 percent--than any other class of owner.

All public agencies together hold 10 percent of the commercial forest land, most of it in national forests. Like the forest land held by forest-products industries, public forest land has somewhat bigger than average stands of timber. Nearly half of the public forest area is in saw-timber stands. It has 12 percent of the total growing stock and 14 percent of the sawlog volume in Mississippi.

Accuracy of the Survey

Where sampling methods are used, as in the Forest Survey, accuracy of the resulting estimates may be affected by two types of error. The first type stems from use of a sample to estimate the whole and from variability of the item being sampled. This type is termed sampling error; it is susceptible to a mathematical evaluation of the probability of error. The second type of error derives from human mistakes in measurement, judgment, arithmetic, or recording, and from limitations of method or equipment. Methods for calculating the effect of this second type of error--often referred to as reporting and estimating error--have not been developed. Reporting and estimating error can, however, be held to a minimum by training, good supervision, checking, and emphasis on careful work. This the Forest Survey constantly attempts to do.

The 1946-48 data on forest acreage and timber volumes are based on a forest-nonforest dot classification made on aerial photographs and on ground classification and measurement of quarter-acre sample plots located in a square pattern over the State. In 55 counties, pairs of plots were located every 3 miles on lines 3 miles apart; in the other 27 counties, the spacing was 4.2 miles. Statistical analysis of the data, using random-sampling formulas, indicates a sampling error of 0.5 percent for the State estimate of total forest acreage, 2.1 percent for total growing stock, and 2.6 percent for sawlog growing stock. Because the volume estimates are derived from a systematic sample, and tests indicate that systematic sampling is more generally efficient than a random sample of the same size, the estimates of volume sampling error may be considered as setting an upper limit of error, rather than as expressing the actual probability of error.

As the State total acreage and volumes are broken down by Survey region, county, forest type, species, and other subdivisions, the possibility of error increases and is greatest for the smallest items. The order of this increase is suggested in the following tabulation, which shows the sampling error to which the estimates may be liable on a probability of two chances out of three. The figures were obtained by averaging out the areas with 3-mile and those with 4.2 mile plot spacing, and by averaging out the differences in forest variability over the State. They may therefore apply only approximately to any breakdown of a State total.

Approximate sampling error in commercial-forest acreage		Approximate sampling error in total growing stock		Approximate sampling error in sawlog growing stock	
<u>Thousand acres</u>	<u>Percent error</u>	<u>Million cubic feet</u>	<u>Percent error</u>	<u>Million board feet</u>	<u>Percent error</u>
16,500	0.5	7,500	2.1	29,000	2.6
10,000	0.6	5,000	2.6	20,000	3.2
5,000	0.9	2,500	3.7	10,000	4.4
2,000	1.4	1,000	5.8	4,000	7.0
500	2.9	300	10.6	1,000	14.1
50	9.1	30	33.6	100	44.5

Ownership of forest land was obtained primarily from a sample of 166 four-square-mile areas distributed over the State. Volume data by class of owner were based on owner classification of all sample plots.

Growth estimates are based on radial-growth measurements and dead-tree data taken on the sample plots. No attempt was made to calculate sampling error in the growth estimates.

The estimates of timber drain are based upon a 100-percent canvass of timber production, except that in the case of fuel wood, fence posts, and miscellaneous domestic use on farms, production was estimated from an area sample. The data on production of each commodity were converted to terms of drain upon timber growing stock by using drain-to-production ratios derived from measurements taken on sample cutting areas. The sampling error to which the State total cubic-foot drain estimates are liable, on a probability of two chances out of three, is as follows for each commodity.

<u>Commodity</u>	<u>Sampling error in cubic-foot drain</u>
	<u>Percent error</u>
Sawlogs	3.2
Fuelwood	12.0
Pulpwood	3.1
Hewn ties	2.5
Cooperage bolts	6.9
Veneer logs	5.9
Poles	0.1
Fence posts	15.8
Piling	0.1
Miscellaneous products	13.0
Miscellaneous domestic use	49.8
All commodities	2.6

In computing the changes that have taken place between 1932-35 and 1946-48, the data from the first Forest Survey were adjusted to make them as closely comparable as possible to data from the second Survey. This was necessary because of certain basic differences between the two sets of data. For example, published estimates from the first Survey were based on a then official figure of 29,671,680 acres of total land area in Mississippi. This has since been superseded by a revised figure of 30,348,800 acres (from the Bureau of Census "Areas of the United States, 1940"), based on more accurate measurement. Thus, while actual land acreage has changed little if at all, the estimate of land acreage has increased 2.3 percent, affecting forest-area and timber-volume estimates in like proportion. Again, the boundaries of some of the Survey regions were changed between the two Surveys, so as to put all boundaries on county lines for convenience in compilation. Yet again, the lower diameter limit for hardwood sawlog trees was dropped from 13.0 inches d.b.h. on the first Survey to 11.0 inches on the second Survey, in line with changing utilization practices. In addition to these major points, there were a number of procedural differences between the two Surveys that were taken into account. In every case, the data from the first Survey were adjusted to conform to the standards of the second Survey before change was computed.

It is not possible to estimate the sampling error in the data on change in forest acreage and timber volume. In the 1932-35 Survey, sample plots were spaced one-eighth mile apart on lines 10 miles apart; an estimate of sampling error was not made. Sampling error in the State forest acreage estimate of the first Survey was probably very small, as it is for the second Survey; and the indicated change in total forest acreage may be considered essentially correct. Indicated changes for Survey regions and other portions of the total acreage should be valued in proportion to the magnitude of the item and of the change. Changes in timber volume, because of the possible effect of non-sampling as well as sampling errors, are shown only for major groupings of the data.

EXPANDED TABLES

Table 16.--Land area by type of use and Survey region, 1946-48

Land use	State	North	Central	South	Delta
-----Thousand acres-----					
Forest: ^{1/}					
Commercial	16,508.9	3,715.0	6,007.6	4,745.9	2,040.4
Reserved-commercial	23.6	7.9	12.4	.5	2.8
Total	16,532.5	3,722.9	6,020.0	4,746.4	2,043.2
Farm nonforest: ^{2/}					
Cropland in use	6,585.9	1,944.0	1,655.2	685.6	2,301.1
Idle and fallow	850.4	252.1	339.8	99.1	159.4
Pasture	4,232.4	1,749.4	1,777.3	282.8	422.9
Other farm	1,000.8	419.6	262.7	66.5	252.0
Total	12,669.5	4,365.1	4,035.0	1,134.0	3,135.4
Other nonforest	1,146.8	308.2	243.8	308.4	286.4
All land	30,348.8	8,396.2	10,298.8	6,188.8	5,465.0

^{1/} No forest land was classed noncommercial because of its incapacity to produce commercial timber.

^{2/} Based on 1945 Census of Agriculture.

Table 17.--Forest land by class of ownership, 1946-48

Ownership	Commercial forest		Reserved-commercial forest	
	Thousand acres	Percent	Thousand acres	Percent
Private:				
Cotton, general, and cotton-vegetable farmer ^{1/}	4,400.4	26.7		
Other farmer ^{1/}	2,588.0	15.7		
Businessman, housewife, wage earner, and pro- fessional worker	5,077.2	30.7		
Lumber company	1,162.6	7.0		
Pulp company	548.2	3.3		
Sawmill-farmer	275.8	1.7		
Concentration-yard owner	224.2	1.4		
Naval stores company	33.0	0.2		
Other forest industry	48.5	.3		
Real estate company and land speculator	121.2	.7		
Miscellaneous	306.3	1.9		
Total	14,785.4	89.6		
Public:				
National forest	1,034.7	6.3	.6	2.5
Soil Conservation Service	70.3	.4	..	..
Fish and Wildlife Service	30.0	.2	..	..
Other federal	2/89.5	.5	11.2	47.5
State University and colleges	29.1	.2	..	..
Other State	55.1	.3	11.8	50.0
County	414.8	2.5	..	..
Total	1,723.5	10.4	23.6	100.0

All ownership	16,508.9	100.0	23.6	100.0
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^{1/} Farm woodland, as classified by the Bureau of the Census, totals 6.9 million acres in Mississippi.

^{2/} 10,000 acres of this total are held by the Indian Service.

Table 18.--Commercial forest land by class of ownership and Survey region, 1946-48

Ownership	State	North	Central	South	Delta
-----Thousand acres-----					
Private:					
Cotton, general, and cotton-vegetable farmer ^{1/}	4,400.4	1,396.7	1,433.1	1,018.6	552.0
Other farmer ^{1/}	2,588.0	388.5	1,265.6	598.2	335.7
Businessman, housewife, wage earner, and professional worker	5,077.2	1,303.1	1,505.9	1,572.7	695.5
Lumber company	1,162.6	82.8	496.8	400.0	183.0
Pulp company	548.2	..	360.9	180.3	7.0
Sawmill-farmer	275.8	71.9	101.8	33.0	69.1
Concentration-yard owner	224.2	141.1	73.1	10.0	..
Other forest industry	81.5	..	..	53.0	28.5
Real estate company and land speculator	121.2	8.2	54.2	50.0	8.8
Miscellaneous	306.3	45.0	94.1	124.8	42.4
Total	14,785.4	3,437.3	5,385.5	4,040.6	1,922.0
Public:					
National forest	1,034.7	121.3	360.2	494.3	58.9
County	414.8	40.1	185.4	142.0	47.3
Other public	2/274.0	116.3	76.5	69.0	12.2
Total	1,723.5	277.7	622.1	705.3	118.4
All ownership	16,508.9	3,715.0	6,007.6	4,745.9	2,040.4

^{1/} Farm woodland, as classified by the Bureau of the Census, totals 6.9 million acres in Mississippi--2.1 million acres in the North region, 2.7 million acres in the Central region, 1.2 million acres in the South, and 0.9 million acres in the Delta.

^{2/} The Indian Service holds 10,000 acres of this total--9,900 acres in the Central region, and 100 acres in the South.

Table 19.--Commercial forest land by stand size and class of ownership, 1946-48

Ownership	All stand sizes	Saw timber	Cordwood	Other
----- <u>Thousand acres</u> -----				
Private:				
Cotton, general, and cotton-vegetable farmer	4,400.4	1,354.1	2,005.9	1,040.4
Other farmer	2,588.0	974.7	926.8	686.5
Businessman, housewife, wage earner, and professional worker	5,077.2	1,649.7	2,063.3	1,364.2
Lumber company	1,162.6	509.1	311.7	341.8
Pulp company	548.2	300.4	153.1	94.7
Sawmill-farmer	275.8	119.3	117.6	38.9
Concentration-yard owner	224.2	84.4	108.6	31.2
Other forest industry	81.5	30.4	24.9	26.2
Real estate company and land speculator	121.2	42.5	41.6	37.1
Miscellaneous	306.3	92.1	122.6	91.6
Total	14,785.4	5,156.7	5,876.1	3,752.6
Public:				
National forest	1,034.7	464.5	336.6	233.6
County	414.8	203.9	82.7	128.2
Other public	274.0	119.9	110.8	43.3
Total	1,723.5	788.3	530.1	405.1
All ownership	16,508.9	5,945.0	6,406.2	4,157.7

Table 20.--Land area and commercial forest by county, 1946-48 ^{1/}

County	All land	Commercial forest	
	Thousand acres	Thousand acres	Percent
Adams	286.7	191.0	66.6
Alcorn	259.2	119.8	46.2
Amite	466.6	279.7	59.9
Attala	463.4	259.7	56.0
Benton	263.7	155.1	58.8
Bolivar	586.9	126.4	21.5
Calhoun	378.9	214.1	56.5
Carroll	408.3	191.7	47.0
Chickasaw	323.8	127.9	39.5
Choctaw	266.9	122.3	45.8
Claiborne	311.0	196.8	63.3
Clarke	446.1	314.3	70.5
Clay	265.0	105.7	39.9
Coahoma	364.8	85.5	23.4
Copiah	499.9	296.7	59.4
Covington	266.2	163.1	61.3
DeSoto	305.9	64.8	21.2
Forrest	300.2	245.0	81.6
Franklin	363.5	270.5	74.4
George	307.8	274.5	89.2
Greene	465.9	405.6	87.1
Grenada	286.1	154.2	53.9
Hancock	310.4	222.1	71.6
Harrison	374.4	314.5	84.0
Hinds	561.3	211.6	37.7
Holmes	489.0	178.6	36.5
Humphreys	262.4	97.6	37.2
Issaquena	265.6	167.4	63.0
Itawamba	346.2	208.3	60.2
Jackson	476.2	409.1	85.9
Jasper	437.1	273.8	62.6
Jefferson	332.8	196.6	59.1
Jeff Davis	265.0	164.2	62.0
Jones	451.8	301.7	66.8
Kemper	484.5	305.0	63.0
Lafayette	434.6	219.3	50.5
Lamar	320.0	267.7	83.7
Lauderdale	461.4	308.8	66.9
Lawrence	277.1	167.3	60.4
Leake	375.0	192.9	51.4
Lee	291.2	61.9	21.3
Leflore	376.3	111.7	29.7

Table 20.--Land area and commercial forest by county, 1946-48 ^{1/} (Cont'd.)

County	All land	Commercial forest	
	Thousand acres	Thousand acres	Percent
Lincoln	375.0	228.6	61.0
Lowndes	325.1	116.6	35.9
Madison	480.6	145.8	30.3
Marion	352.0	238.9	67.9
Marshall	454.4	150.7	33.2
Monroe	492.2	225.6	45.8
Montgomery	257.9	146.5	56.8
Neshoba	363.5	204.2	56.2
Newton	371.2	203.0	54.7
Noxubee	444.8	197.6	44.4
Oktibbeha	290.6	122.3	42.1
Panola	450.6	182.9	40.6
Pearl River	530.0	399.5	75.4
Perry	417.9	350.9	84.0
Pike	262.4	126.7	48.3
Pontotoc	320.6	132.3	41.3
Prentiss	267.5	113.7	42.5
Quitman	263.7	88.4	33.5
Rankin	512.0	337.1	65.8
Scott	393.6	239.6	60.9
Sharkey	279.0	157.9	56.6
Simpson	375.7	241.3	64.2
Smith	410.9	231.2	56.3
Stone	286.7	257.1	89.7
Sunflower	443.5	65.9	14.9
Tallahatchie	412.2	163.8	39.7
Tate	263.0	69.2	26.3
Tippah	297.0	130.1	43.8
Tishomingo	288.6	173.9	60.3
Tunica	293.1	113.5	38.7
Union	270.1	96.0	35.5
Walthall	257.9	156.0	60.5
Warren	362.2	262.9	72.6
Washington	465.9	113.7	24.4
Wayne	529.3	408.7	77.2
Webster	266.2	138.9	52.2
Wilkinson	432.0	321.4	74.4
Winston	387.8	233.7	60.3
Yalobusha	322.6	171.2	53.1
Yazoo	600.4	307.1	51.1
All counties	30,348.8	16,508.9	54.4

^{1/} County data on sawlog and total growing stock, suitable for combining into county groups, are available as a supplement to this release.

Table 21. --Commercial forest land by stand size and forest type, by
Survey region, 1946-48

Forest type	All stand sizes	Large saw timber	Small saw timber	Cordwood	Seedling and sapling	Restock- ing and denuded
-----Thousand acres-----						
STATE						
Softwood types:						
Loblolly-shortleaf pine	5,174.3	439.8	1,631.0	2,074.8	652.9	375.8
Longleaf-slash pine	2,201.4	24.8	434.5	752.6	313.9	675.6
Cedar	51.8	..	..	14.7	9.0	28.1
Total	7,427.5	464.6	2,065.5	2,842.1	975.8	1,079.5
Hardwood types:						
Bottomland hardwood	3,388.4	552.8	1,088.5	1,068.2	520.4	158.5
Upland hardwood	1,928.9	315.6	417.2	692.2	229.7	274.2
Upland hardwood-pine	3,764.1	333.6	707.2	1,803.7	532.3	387.3
Total	9,081.4	1,202.0	2,212.9	3,564.1	1,282.4	820.0
All types	16,508.9	1,666.6	4,278.4	6,406.2	2,258.2	1,899.5
NORTH						
Softwood types:						
Loblolly-shortleaf pine	1,009.8	32.4	176.7	585.0	162.9	52.8
Cedar	17.7	..	..	..	..	17.7
Total	1,027.5	32.4	176.7	585.0	162.9	70.5
Hardwood types:						
Bottomland hardwood	541.9	41.9	178.0	262.6	56.3	3.1
Upland hardwood	935.1	79.6	192.7	472.7	145.2	44.9
Upland hardwood-pine	1,210.5	19.4	117.8	781.3	235.0	57.0
Total	2,687.5	140.9	488.5	1,516.6	436.5	105.0
All types	3,715.0	173.3	665.2	2,101.6	599.4	175.5
CENTRAL						
Softwood types:						
Loblolly-shortleaf pine	3,269.2	369.6	1,134.8	1,088.4	408.2	268.2
Longleaf-slash pine	135.6	9.5	33.8	50.1	21.9	20.3
Cedar	17.8	..	..	5.0	5.2	7.6
Total	3,422.6	379.1	1,168.6	1,143.5	435.3	296.1

Table 21.--Commercial forest land by stand size and forest type, by
Survey region, 1946-48 (Cont'd.)

Forest type	All stand sizes	Large saw timber	Small saw timber	Cordwood	Seedling and sapling	Restock- ing and denuded
-----Thousand acres-----						
CENTRAL (Cont'd.)						
Hardwood types:						
Bottomland hardwood	701.9	248.0	227.7	194.6	15.4	16.2
Upland hardwood	445.8	131.5	129.4	114.1	40.5	30.3
Upland hardwood-pine	1,437.3	273.8	436.7	565.9	97.9	63.0
Total	2,585.0	653.3	793.8	874.6	153.8	109.5
All types	6,007.6	1,032.4	1,962.4	2,018.1	589.1	405.6
SOUTH						
Softwood types:						
Loblolly-shortleaf pine	853.3	33.0	311.2	374.9	81.8	52.4
Longleaf-slash pine	2,065.8	15.3	400.7	702.5	292.0	655.3
Total	2,919.1	48.3	711.9	1,077.4	373.8	707.7
Hardwood types:						
Bottomland hardwood	543.1	50.8	195.5	198.4	55.7	42.7
Upland hardwood	246.3	3.9	5.7	19.3	29.6	187.8
Upland hardwood-pine	1,037.4	27.9	134.3	417.5	192.8	264.9
Total	1,826.8	82.6	335.5	635.2	278.1	495.4
All types	4,745.9	130.9	1,047.4	1,712.6	651.9	1,203.1
DELTA						
Softwood types:						
Loblolly-shortleaf pine	42.0	4.8	8.3	26.5	..	2.4
Cedar	16.3	..	..	9.7	3.8	2.8
Total	58.3	4.8	8.3	36.2	3.8	5.2
Hardwood types:						
Bottomland hardwood	1,601.5	212.1	487.3	412.6	393.0	96.5
Upland hardwood	301.7	100.6	89.4	86.1	14.4	11.2
Upland hardwood-pine	78.9	12.5	18.4	39.0	6.6	2.4
Total	1,982.1	325.2	595.1	537.7	414.0	110.1
All types	2,040.4	330.0	603.4	573.9	417.8	115.3

Table 22.--Commercial forest land by degree of tree stocking and forest type, by Survey region, 1946-48

Forest type	All stocking	Well stocked	Partially stocked	Poorly stocked	Non- stocked
-----Thousand acres-----					
STATE					
Softwood types:					
Loblolly-shortleaf pine	5,174.3	2,145.3	1,947.7	970.8	110.5
Longleaf-slash pine	2,201.4	249.6	719.5	772.3	460.0
Cedar	51.8	5.9	14.0	31.9	..
Total	7,427.5	2,400.8	2,681.2	1,775.0	570.5
Hardwood types:					
Bottomland hardwood	3,388.4	1,195.6	1,588.3	482.0	122.5
Upland hardwood	1,928.9	728.6	700.8	331.1	168.4
Upland hardwood-pine	3,764.1	1,220.0	1,649.9	728.2	166.0
Total	9,081.4	3,144.2	3,939.0	1,541.3	456.9
All types	16,508.9	5,545.0	6,620.2	3,316.3	1,027.4
NORTH					
Softwood types:					
Loblolly-shortleaf pine	1,009.8	372.5	409.0	208.8	19.5
Cedar	17.7	..	..	17.7	..
Total	1,027.5	372.5	409.0	226.5	19.5
Hardwood types:					
Bottomland hardwood	541.9	261.9	211.5	66.3	2.2
Upland hardwood	935.1	394.3	355.5	168.6	16.7
Upland hardwood-pine	1,210.5	382.2	613.7	209.2	5.4
Total	2,687.5	1,038.4	1,180.7	444.1	24.3
All types	3,715.0	1,410.9	1,589.7	670.6	43.8
CENTRAL					
Softwood types:					
Loblolly-shortleaf pine	3,269.2	1,421.5	1,202.0	565.1	80.6
Longleaf-slash pine	135.6	11.5	73.7	36.6	13.8
Cedar	17.8	..	10.2	7.6	..
Total	3,422.6	1,433.0	1,285.9	609.3	94.4

Table 22.--Commercial forest land by degree of tree stocking and forest type, by Survey region, 1946-48 (Cont'd.)

Forest type	All stocking	Well stocked	Partially stocked	Poorly stocked	Non- stocked
----- Thousand acres -----					
CENTRAL (Cont'd.)					
Hardwood types:					
Bottomland hardwood	701.9	314.8	266.4	104.5	16.2
Upland hardwood	445.8	183.9	184.8	63.5	13.6
Upland hardwood-pine	1,437.3	573.9	627.6	219.6	16.2
Total	2,585.0	1,072.6	1,078.8	387.6	46.0
All types	6,007.6	2,505.6	2,364.7	996.9	140.4
SOUTH					
Softwood types:					
Loblolly-shortleaf pine	853.3	324.5	336.7	184.1	8.0
Longleaf-slash pine	2,065.8	238.1	645.8	735.7	446.2
Total	2,919.1	562.6	982.5	919.8	454.2
Hardwood types:					
Bottomland hardwood	543.1	143.9	229.1	144.3	25.8
Upland hardwood	246.3	8.9	36.5	62.8	138.1
Upland hardwood-pine	1,037.4	222.0	374.0	299.4	142.0
Total	1,826.8	374.8	639.6	506.5	305.9
All types	4,745.9	937.4	1,622.1	1,426.3	760.1
DELTA					
Softwood types:					
Loblolly-shortleaf pine	42.0	26.8	..	12.8	2.4
Cedar	16.3	5.9	3.8	6.6	..
Total	58.3	32.7	3.8	19.4	2.4
Hardwood types:					
Bottomland hardwood	1,601.5	475.0	881.3	166.9	78.3
Upland hardwood	301.7	141.5	124.0	36.2	..
Upland hardwood-pine	78.9	41.9	34.6	..	2.4
Total	1,982.1	658.4	1,039.9	203.1	80.7
All types	2,040.4	691.1	1,043.7	222.5	83.1

Table 23.--Area of saw timber stands by stand quality and forest type, by Survey region, 1946-48

Forest type	All qualities	Fair or better	Poor
-----Thousand acres-----			
STATE			
Softwood types:			
Loblolly-shortleaf pine	2,070.8	1,201.0	869.8
Longleaf-slash pine	459.3	176.5	282.8
Total	2,530.1	1,377.5	1,152.6
Hardwood types:			
Bottomland hardwood	1,641.3	1,126.4	514.9
Upland hardwood	732.8	481.2	251.6
Upland hardwood-pine	1,040.8	578.8	462.0
Total	3,414.9	2,186.4	1,228.5
All types	5,945.0	3,563.9	2,381.1
NORTH			
Softwood types:			
Loblolly-shortleaf pine	209.1	115.3	93.8
Hardwood types:			
Bottomland hardwood	219.9	128.7	91.2
Upland hardwood	272.3	180.5	91.8
Upland hardwood-pine	137.2	65.9	71.3
Total	629.4	375.1	254.3
All types	838.5	490.4	348.1
CENTRAL			
Softwood types:			
Loblolly-shortleaf pine	1,504.4	943.1	561.3
Longleaf-slash pine	43.3	30.5	12.8
Total	1,547.7	973.6	574.1

Table 23.--Area of saw timber stands by stand quality and forest type, by Survey region, 1946-48 (Cont'd.)

Forest type	All qualities	Fair or better	Poor
----- Thousand acres -----			
CENTRAL (Cont'd.)			
Hardwood types:			
Bottomland hardwood	475.7	339.6	136.1
Upland hardwood	260.9	185.2	75.7
Upland hardwood-pine	710.5	391.6	318.9
Total	1,447.1	916.4	530.7
All types	2,994.8	1,890.0	1,104.8
SOUTH			
Softwood types:			
Loblolly-shortleaf pine	344.2	142.6	201.6
Longleaf-slash pine	416.0	146.0	270.0
Total	760.2	288.6	471.6
Hardwood types:			
Bottomland hardwood	246.3	167.6	78.7
Upland hardwood	9.6	6.3	2.8
Upland hardwood-pine	162.2	90.4	71.8
Total	418.1	264.8	153.3
All types	1,178.3	553.4	624.9
DELTA			
Softwood types:			
Loblolly-shortleaf pine	13.1	..	13.1
Hardwood types:			
Bottomland hardwood	699.4	490.5	208.9
Upland hardwood	190.0	108.7	81.3
Upland hardwood-pine	30.9	30.9	..
Total	920.3	630.1	290.2
All types	933.4	630.1	303.3

Table 2₁.--Basal area per acre of growing stock, ^{1/} by forest-type group, stand size, and tree diameter, 1946-48

Diameter breast high (inches)	All types			Softwood			Bottomland hardwood			Upland hardwood ^{2/}		
	Saw- timber stands	Cord- wood stands	Other stands	Saw- timber stands	Cord- wood stands	Other stands	Saw- timber stands	Cord- wood stands	Other stands	Saw- timber stands	Cord- wood stands	Other stands
	Square feet											
2	4.4	3.9	4.1	5.5	4.3	4.0	2.6	3.6	6.6	4.5	3.5	3.0
4	5.8	6.2	4.0	7.5	7.3	3.9	4.0	5.3	4.9	5.3	5.3	3.7
6	6.0	6.9	1.5	7.9	9.1	1.6	4.4	6.0	1.4	4.8	4.9	1.4
8	7.4	6.9	1.1	9.3	7.5	1.1	6.0	7.3	1.7	6.1	6.4	.9
10	8.0	5.0	1.0	10.0	4.7	1.0	6.4	5.5	1.1	6.8	5.2	.9
12	8.7	3.1	.8	10.0	2.6	.7	7.4	3.4	1.1	7.9	3.5	.8
14	7.9	2.1	.5	7.9	1.6	.4	8.2	2.7	1.2	7.5	2.3	.4
16	5.9	1.3	.5	5.5	.8	.2	6.9	2.3	1.2	5.6	1.3	.4
18	4.6	.7	.3	3.5	.4	(3/)	6.2	1.3	.9	4.7	.7	.3
20	3.1	.4	.2	2.0	.2	.1	4.4	.9	.8	3.5	.4	.1
22	2.1	.2	.1	1.2	.1	(3/)	3.0	.4	.6	2.5	.2	(3/)
24	1.4	.2	.1	.6	.1	..	2.7	.6	.5	1.4	.1	..
26	.8	.1	.1	.3	..	..	1.5	.4	.3	.9	(3/)	..
28	.7	(3/)	.1	.2	..	..	1.5	.1	.3	.6	.1	..
30	.5	(3/)	..	.1	..	..	1.2	.1	..	.4	(3/)	..
32	.2	(3/)	..	(3/)	..	..	.3	..	..	.3	(3/)	..
34	.2	(3/)	..	.1	..	..	.4	.1	..	.2	..	..
36	.3	(3/)	(3/)	(3/)	..	..	.7	..	..	.3	(3/)	.1
38	.1	..	..	..	..	..	.4	..	..	..	..	..
40	.1	..	..	..	..	..	.3	..	..	..	..	..
42	..	..	..	..	..	..	..	..	..	..	..	..
46	3/	..	..	..	..	..	.1	..	..	..	..	..
48	..	..	..	..	..	..	..	..	..	..	..	..
Total	68.2	37.0	14.4	71.6	38.7	13.0	68.6	40.0	22.6	63.3	33.9	12.0

^{1/} Includes sound, well-formed 2- and 4-inch trees.

^{2/} Includes the upland hardwood-pine type.

^{3/} Negligible.

Table 25.--Basal area per acre of growing stock ^{1/} and cull trees by forest-type group and Survey region, 1946-48

Forest type	State	North	Central	South	Delta
<u>Square feet</u>					
Softwood types:					
Growing stock	43.4	37.3	54.3	29.1	37.9
Cull trees	7.1	8.2	7.1	6.6	6.9
Total	50.5	45.5	61.4	35.7	44.8
Bottomland hardwood:					
Growing stock	50.5	39.5	70.5	45.7	46.6
Cull trees	26.1	25.0	22.1	46.4	23.2
Total	76.6	64.5	92.6	92.1	69.8
Upland hardwood: ^{2/}					
Growing stock	38.5	30.8	53.9	19.8	53.4
Cull trees	14.6	16.3	13.1	12.9	16.7
Total	53.1	47.1	67.0	32.7	70.1
All growing stock and cull trees	57.0	49.2	66.8	41.3	69.2

^{1/} Includes sound, well-formed 2- and 4-inch trees.

^{2/} Includes upland hardwood-pine.

Table 26.--Distribution of total growing stock by species within each forest type, 1946-48

Species	All types ^{1/}	Loblolly-shortleaf pine	Longleaf-slash pine	Bottom-land hardwood	Upland hard-wood	Upland hardwood-pine
----- Percent -----						
Softwood:						
Loblolly pine	18.6	42.9	3.4	1.2	..	7.3
Shortleaf pine	12.2	27.7	1.5	.1	.3	6.9
Longleaf pine	5.0	1.0	48.1	.1	..	1.4
Slash pine	4.0	.6	38.6	.5	..	.8
Other pine	1.3	1.9	0.1	1.4	..	1.5
Cypress	2.1	(2/)	.2	8.4	.1	(2/)
Cedar	.1	.1	..	(2/)	.2	.1
Total	43.3	74.2	91.9	11.7	.6	18.0
Hardwood:						
Southern red, black, and scarlet oaks	5.5	4.4	2.4	.5	13.4	12.4
Cherrybark, Shumard, and northern red oaks	1.7	.8	..	1.1	4.8	3.5
Water oaks	5.8	1.7	.5	13.5	7.6	6.3
White oak	3.6	2.4	.3	..	9.7	9.4
Other white oaks	5.6	3.7	.8	7.8	6.9	8.3
Sweetgum	11.7	6.3	.4	16.7	21.3	17.2
Black and tupelo gums	4.6	2.0	2.4	9.6	3.9	5.0
Cottonwood	1.1	..	..	4.2	.3	(2/)
Willow	1.8	.1	..	7.1	.1	.1
Pecan	1.4	(2/)	..	5.7	..	.1
Other hickories	4.0	1.9	.3	2.4	10.8	8.7
Elms	2.2	.3	..	5.1	4.1	2.2
Red maple	.5	.2	(2/)	1.0	.9	.8
Yellow-poplar	1.5	.7	.3	1.2	3.7	2.9
Sycamore	.7	(2/)	..	1.8	1.5	.5
Ash	1.0	.1	..	2.8	1.2	.7
Beech	1.0	.3	..	1.0	3.7	1.7
Sweetbay and magnolia	1.1	.5	.6	2.1	1.3	1.2
Hackberry	.6	(2/)	..	2.3	.3	.2
Other	1.3	.4	.1	2.4	3.9	.8
Total	56.7	25.8	8.1	88.3	99.4	82.0
All species	100.0	100.0	100.0	100.0	100.0	100.0

^{1/} Cedar type included.

^{2/} Negligible.

Table 27.--Total growing stock by species and Survey region, 1946-48

Species	State	North	Central	South	Delta
- - - - - Million cubic feet - - - - -					
Softwood:					
Loblolly pine	1,427.4	87.4	1,022.7	315.8	1.5
Shortleaf pine	935.3	266.0	542.1	113.0	14.2
Longleaf pine	384.9	..	68.3	316.6	..
Slash pine	308.2	..	1.8	306.4	..
Other pine	102.9	..	48.4	54.5	..
Cypress	163.7	14.9	32.0	8.3	108.5
Cedar	8.5	2.1	3.1	..	3.3
Total	3,330.9	370.4	1,718.4	1,114.6	127.5
Hardwood:					
Southern red, black, and scarlet oaks	422.6	145.0	193.3	62.7	21.6
Cherrybark, Shumard, and northern red oaks	127.2	20.8	82.0	5.6	18.8
Water oaks	453.7	54.5	196.5	65.8	136.9
White oak	273.8	82.0	143.5	32.7	15.6
Other white oaks	428.8	110.2	189.2	31.3	98.1
Sweetgum	900.0	167.2	524.1	74.6	134.1
Black and tupelo gums	355.8	25.4	145.7	138.7	46.0
Cottonwood	83.2	4.5	29.4	7.7	41.6
Willow	140.0	17.1	40.3	0.4	82.2
Pecan	110.2	0.9	21.2	0.2	87.9
Other hickories	304.2	87.8	164.8	28.1	23.5
Elms	168.3	30.6	69.6	3.6	64.5
Red maple	40.6	9.4	18.9	6.3	6.0
Yellow-poplar	113.2	14.1	53.2	34.5	11.4
Sycamore	52.3	16.3	21.6	1.8	12.6
Ash	75.5	8.0	34.9	3.5	29.1
Beech	79.6	8.8	50.6	8.7	11.5
Sweetbay and magnolia	84.1	1.2	31.4	50.7	.8
Hackberry	49.8	4.7	13.3	2.2	29.6
Other	98.5	10.2	42.2	7.9	38.2
Total	4,361.4	818.7	2,065.7	567.0	910.0
All species	7,692.3	1,189.1	3,784.1	1,681.6	1,037.5

Table 28.--Total volume by class of timber and species, by Survey region, 1946-48

Species	All timber	Growing stock			Tops and limbs	Cull trees
		All trees	Sawlog trees	Cordwood trees		
----- Million cubic feet -----						
Softwood:		STATE				
Loblolly pine	1,465.1	1,427.4	927.4	282.9	..	37.7
Shortleaf pine	972.5	935.3	462.8	351.4	..	37.2
Longleaf pine	391.1	384.9	237.1	84.0	..	6.2
Slash pine	319.3	308.2	193.0	67.8	..	11.1
Other pine	109.6	102.9	72.5	14.0	..	6.7
Other softwood	185.5	172.2	127.5	12.2	..	13.3
Total	3,443.1	3,330.9	2,020.3	812.3	..	112.2
Hardwood:						
Red oaks	1,751.9	1,003.5	651.5	352.0	402.5	345.9
White oaks	1,215.8	702.6	400.2	302.4	248.3	264.9
Sweetgum	1,327.4	900.0	495.1	404.9	245.7	181.7
Black and tupelo gum	708.2	355.8	203.7	152.1	116.0	236.4
Other hardwood	3,108.1	1,399.5	918.2	481.3	546.1	1,162.5
Total	8,111.4	4,361.4	2,668.7	1,692.7	1,558.6	2,191.4
All species	11,554.5	7,692.3	4,689.0	2,505.0	1,558.6	2,303.6
		NORTH				
Softwood:						
Loblolly pine	96.5	87.4	46.7	27.1	..	9.1
Shortleaf pine	291.4	266.0	124.8	104.3	..	25.4
Other softwood	18.5	17.0	11.5	2.2	..	1.5
Total	406.4	370.4	183.0	133.6	..	36.0
Hardwood:						
Red oaks	395.4	220.3	132.5	87.8	80.2	94.9
White oaks	352.5	192.2	101.1	91.1	61.7	98.6
Sweetgum	278.1	167.2	84.5	82.7	42.3	68.6
Black and tupelo gum	67.5	25.4	13.6	11.8	8.6	33.5
Other hardwood	549.4	213.6	118.5	95.1	73.6	262.2
Total	1,642.9	818.7	450.2	368.5	266.4	557.8
All species	2,049.3	1,189.1	633.2	502.1	266.4	593.8
		CENTRAL				
Softwood:						
Loblolly pine	1,037.1	1,022.7	656.6	213.2	..	14.4
Shortleaf pine	548.5	542.1	268.3	209.0	..	6.4
Longleaf pine	68.9	68.3	44.8	14.0	..	.6
Slash pine	1.8	1.8	1.4	.2	..	..
Other pine	51.4	48.4	32.9	7.7	..	3.0
Other softwood	39.0	35.1	23.6	3.9	..	3.9
Total	1,746.7	1,718.4	1,027.6	448.0	..	28.3

Table 28. --Total volume by class of timber and species, by Survey region, 1946-48 (Cont'd.)

Species	Growing stock				Tops and limbs	Cull trees
	All timber	All trees ^{1/}	Sawlog trees	Cordwood		
----- Million cubic feet -----						
CENTRAL (Cont'd.)						
Hardwood:						
Red oaks	751.0	471.8	304.1	167.7	181.6	97.6
White oaks	489.3	332.7	171.9	160.8	98.6	58.0
Sweetgum	712.7	524.1	273.3	250.8	131.0	57.6
Black and tupelo gum	232.1	145.7	78.9	66.8	42.0	44.4
Other hardwood	1,112.7	591.4	381.1	210.3	222.9	298.4
Total	3,297.8	2,065.7	1,209.3	856.4	676.1	556.0
All species	5,044.5	3,784.1	2,236.9	1,304.4	676.1	584.3
SOUTH						
Softwood:						
Loblolly pine	329.6	315.8	223.5	41.9	..	13.8
Shortleaf pine	118.0	113.0	62.1	33.9	..	5.0
Longleaf pine	322.2	316.6	192.3	70.0	..	5.6
Slash pine	317.5	306.4	191.6	67.6	..	11.1
Other pine	58.2	54.5	39.6	6.3	..	3.7
Other softwood	12.2	8.3	6.0	0.4	..	3.9
Total	1,157.7	1,114.6	715.1	220.1	..	43.1
Hardwood:						
Red oaks	277.6	134.1	79.2	54.9	54.6	88.9
White oaks	119.5	64.0	35.8	28.2	22.0	33.5
Sweetgum	126.2	74.6	43.0	31.6	21.8	29.8
Black and tupelo gum	320.5	138.7	77.3	61.4	46.9	134.9
Other hardwood	519.4	155.6	101.0	54.6	59.3	304.5
Total	1,363.2	567.0	336.3	230.7	204.6	591.6
All species	2,520.9	1,681.6	1,051.4	450.8	204.6	634.7
DELTA						
Softwood:						
Loblolly pine	1.9	1.5	.6	.7	..	.4
Shortleaf pine	14.6	14.2	7.6	4.2	..	.4
Other softwood	115.8	111.8	86.4	5.7	..	4.0
Total	132.3	127.5	94.6	10.6	..	4.8
Hardwood:						
Red oaks	327.9	177.3	135.7	41.6	86.1	64.5
White oaks	254.5	113.7	91.4	22.3	66.0	74.8
Sweetgum	210.4	134.1	94.3	39.8	50.6	25.7
Black and tupelo gums	88.1	46.0	33.9	12.1	18.5	23.6
Other hardwood	926.6	438.9	317.6	121.3	190.3	297.4
Total	1,807.5	910.0	672.9	237.1	411.5	486.0
All species	1,939.8	1,037.5	767.5	247.7	411.5	490.8

^{1/} Includes tops of softwoods.

Table 29.--Total growing stock by species and stand size, by Survey region, 1946-48

Species	All stand sizes	Large saw timber	Small saw timber	Cordwood	Seedling and sapling	Restocking and denuded
----- Million cubic feet -----						
STATE						
Softwood:						
Loblolly pine	1,427.4	221.3	935.3	247.3	15.7	7.8
Shortleaf pine	935.3	83.7	495.2	330.3	18.9	7.2
Longleaf pine	384.9	24.3	207.2	116.9	16.5	20.0
Slash pine	308.2	8.2	199.7	85.8	9.5	5.0
Other pine	102.9	22.3	74.0	6.6	..	..
Other softwood	172.2	54.0	93.3	15.1	5.6	4.2
Total	3,330.9	413.8	2,004.7	802.0	66.2	44.2
Hardwood:						
Red oaks	1,003.5	259.1	402.4	299.2	31.0	11.8
White oaks	702.6	134.6	301.6	241.3	18.9	6.2
Sweetgum	900.0	189.4	429.6	253.0	24.3	3.7
Black and tupelo gums	355.8	62.2	196.3	83.7	9.2	4.4
Other hardwood	1,399.5	354.2	681.5	304.7	41.4	17.7
Total	4,361.4	999.5	2,011.4	1,181.9	124.8	43.8
All species	7,692.3	1,413.3	4,016.1	1,983.9	191.0	88.0
NORTH						
Softwood:						
Loblolly pine	87.4	9.3	38.8	38.1	1.1	.1
Shortleaf pine	266.0	16.4	105.9	133.1	8.6	2.0
Other softwood	17.0	1.2	11.2	4.4	.1	.1
Total	370.4	26.9	155.9	175.6	9.8	2.2
Hardwood:						
Red oaks	220.3	33.5	71.4	111.2	4.1	.1
White oaks	192.2	21.2	64.5	98.7	6.4	1.4
Sweetgum	167.2	21.8	67.6	73.1	4.2	.5
Black and tupelo gums	25.4	3.1	7.7	12.9	1.5	.2
Other hardwood	213.6	27.2	88.9	86.2	9.9	1.4
Total	818.7	106.8	300.1	382.1	26.1	3.6
All species	1,189.1	133.7	456.0	557.7	35.9	5.8
CENTRAL						
Softwood:						
Loblolly pine	1,022.7	186.9	671.8	147.3	11.3	5.4
Shortleaf pine	542.1	59.2	314.0	157.5	8.0	3.4
Longleaf pine	68.3	13.7	35.8	15.8	2.9	.1
Slash pine	1.8	..	1.8	..	..	..
Other pine	48.4	17.0	28.3	3.1	..	..
Other softwood	35.1	13.8	19.4	1.5	.2	.2
Total	1,718.4	290.6	1,071.1	325.2	22.4	9.1

Table 29.--Total growing stock by species and stand size, by Survey region, 1946-48 (Cont'd.)

Species	All stand sizes	Large saw timber	Small saw timber	Cordwood	Seedling and sapling	Restocking and denuded
----- Million cubic feet -----						
CENTRAL (Cont'd.)						
Hardwood:						
Red oaks	471.8	167.2	196.2	99.4	6.3	2.7
White oaks	332.7	79.1	152.7	93.8	5.2	1.9
Sweetgum	524.1	127.4	247.7	135.5	11.3	2.2
Black and tupelo gums	145.7	34.6	73.6	33.5	2.9	1.1
Other hardwood	591.4	218.1	268.9	93.2	9.3	1.9
Total	2,065.7	626.4	939.1	455.4	35.0	9.8
All species	3,784.1	917.0	2,010.2	780.6	57.4	18.9
SOUTH						
Softwood:						
Loblolly pine	315.8	25.0	224.4	60.8	3.3	2.3
Shortleaf pine	113.0	6.2	67.4	35.3	2.3	1.8
Longleaf pine	316.6	10.6	171.4	101.1	13.6	19.9
Slash pine	306.4	8.2	197.9	85.8	9.5	5.0
Other pine	54.5	5.3	45.7	3.5	..	..
Other softwood	8.3	0.1	0.8	3.8	..	3.6
Total	1,114.6	55.4	707.6	290.3	28.7	32.6
Hardwood:						
Red oaks	134.1	13.2	53.0	54.5	7.3	6.1
White oaks	64.0	7.5	28.8	26.2	1.5	..
Sweetgum	74.6	12.3	37.6	21.3	2.6	0.8
Black and tupelo gums	138.7	6.3	95.2	31.0	3.9	2.3
Other hardwood	155.6	21.7	84.0	41.8	4.3	3.8
Total	567.0	61.0	298.6	174.8	19.6	13.0
All species	1,681.6	116.4	1,006.2	465.1	48.3	45.6
DELTA						
Softwood:						
Loblolly pine	1.5	.1	.3	1.1	..	..
Shortleaf pine	14.2	1.9	7.9	4.4	..	..
Other softwood	111.8	38.9	61.9	5.4	5.3	.3
Total	127.5	40.9	70.1	10.9	5.3	.3
Hardwood:						
Red oaks	177.3	45.2	81.8	34.1	13.3	2.9
White oaks	113.7	26.8	55.6	22.6	5.8	2.9
Sweetgum	134.1	27.9	76.7	23.1	6.2	.2
Black and tupelo gums	46.0	18.2	19.8	6.3	.9	.8
Other hardwood	438.9	87.2	239.7	83.5	17.9	10.6
Total	910.0	205.3	473.6	169.6	44.1	17.4
All species	1,037.5	246.2	543.7	180.5	49.4	17.7

Table 30.--Total growing stock by species group and class of ownership, 1946-48

Ownership	All species	Softwood	Hardwood
-- Million cubic feet --			
Private:			
Cotton, general, and cotton-vegetable farmer	1,816.2	678.7	1,137.5
Other farmer	1,199.5	471.3	728.2
Businessman, housewife, wage earner and professional worker	2,171.9	882.0	1,289.9
Lumber company	709.0	349.4	359.6
Pulp company	368.2	237.0	131.2
Other forest industry	300.8	124.1	176.7
Real estate company and land speculator	51.5	19.3	32.2
Miscellaneous	122.4	52.8	69.6
Total private	6,739.5	2,814.6	3,924.9
Public:			
National forest	572.0	407.5	164.5
County	236.2	48.5	187.7
Other public	144.6	60.3	84.3
Total public	952.8	516.3	436.5
All ownership	7,692.3	3,330.9	4,361.4

Table 31.--Average volume per acre of total growing stock by stand size and forest type, 1946-48

Forest type	All stand sizes	Large saw timber	Small saw timber	Cordwood	Seedling and sapling	Restocking and denuded
-----Cubic feet-----						
Softwood:						
Loblolly-shortleaf pine	578	940	1,103	343	79	45
Longleaf-slash pine	315	948	964	267	80	35
Cedar	106	..	..	231	200	11
Total	497	940	1,073	322	81	38
Hardwood:						
Bottomland hardwood	565	814	928	345	114	158
Upland hardwood	387	747	705	269	89	32
Upland hardwood-pine	357	871	699	285	61	35
Total	441	812	813	300	88	58
All types	466	848	939	310	85	46

Table 32.--Average volume per acre of total growing stock by Survey region and forest type, 1946-48

Forest type	State	North	Central	South	Delta
-----Cubic feet-----					
Softwood:					
Loblolly-shortleaf pine	578	368	642	591	379
Longleaf-slash pine	315	..	468	304	..
Cedar	106	(1/)	(1/)	..	(1/)
Total	497	362	633	388	338
Hardwood:					
Bottomland hardwood	565	423	827	541	505
Upland hardwood	387	312	583	78	581
Upland hardwood-pine	357	245	542	227	420
Total	441	304	626	300	513
All types	466	320	630	354	508

1/ Sample too small to permit regional breakdown.

Table 33. —Sawlog volume by species and Survey region, 1946-48

Species	State	North	Central	South	Delta
--- Million board feet ---					
Softwood:					
Loblolly pine	5,734.7	284.4	4,064.5	1,382.2	3.6
Shortleaf pine	2,785.4	748.1	1,618.7	372.2	46.4
Longleaf pine	1,431.5	..	280.2	1,151.3	..
Slash pine	1,157.2	..	9.4	1,147.8	..
Other pine	454.3	..	206.4	247.9	..
Cypress	802.4	70.9	138.0	37.1	556.4
Cedar	13.6	4.6	6.2	..	2.8
Total	12,379.1	1,108.0	6,323.4	4,338.5	609.2
Hardwood:					
Southern red, black, and scarlet oaks	1,538.2	575.2	635.4	215.1	112.5
Cherrybark, Shumard, and northern red oaks	595.1	86.2	399.7	27.2	82.0
Water oaks	2,089.9	185.0	939.3	272.5	693.1
White oak	1,143.0	328.1	604.5	131.3	79.1
Other white oaks	1,382.8	300.2	474.0	92.7	515.9
Sweetgum	3,112.7	524.6	1,716.0	271.1	601.0
Black and tupelo gums	1,262.1	83.0	487.6	480.0	211.5
Cottonwood	454.0	24.8	175.3	37.7	216.2
Willow	532.8	50.2	219.3	..	263.3
Pecan	607.0	5.2	127.2	.9	473.7
Other hickories	1,175.4	301.1	638.7	132.8	102.8
Elms	664.4	116.5	206.9	9.4	331.6
Red maple	83.7	27.4	30.3	6.5	19.5
Yellow-poplar	499.5	45.8	242.1	145.9	65.7
Sycamore	214.1	60.0	99.7	2.7	51.7
Ash	294.5	21.9	110.0	20.9	141.7
Beech	462.1	43.0	302.0	48.8	68.3
Sweetbay and magnolia	364.7	.8	146.9	211.9	5.1
Hackberry	198.1	13.3	39.2	10.6	135.0
Other	274.8	31.1	96.3	13.5	133.9
Total	16,948.9	2,823.4	7,690.4	2,131.5	4,303.6
All species	29,328.0	3,931.4	14,013.8	6,470.0	4,912.8

Table 34.--Sawlog volume by species and tree diameter, by Survey region, 1946-48

Species	All diameter classes	10-12 inches	14-18 inches	20-24 inches	26 inches and up
----- Million board feet -----					
STATE					
Softwood:					
Loblolly pine	5,734.7	2,157.8	2,731.2	740.0	105.7
Shortleaf pine	2,785.4	1,579.2	958.8	204.1	43.3
Longleaf pine	1,431.5	754.5	610.4	41.0	25.6
Slash pine	1,157.2	550.7	497.7	108.8	..
Other pine	454.3	138.2	258.2	57.9	..
Other softwood	816.0	96.1	244.6	139.7	335.6
Total	12,379.1	5,276.5	5,300.9	1,291.5	510.2
Hardwood:					
Red oaks	4,223.2	664.9	1,936.9	957.3	664.1
White oaks	2,525.8	501.8	1,188.5	542.9	292.6
Sweetgum	3,112.7	638.3	1,824.1	514.6	135.7
Black and tupelo gums	1,262.1	269.1	686.7	235.4	70.9
Other hardwood	5,825.1	887.9	2,897.8	1,480.5	558.9
Total	16,948.9	2,962.0	8,534.0	3,730.7	1,722.2
All species	29,328.0	8,238.5	13,834.9	5,022.2	2,232.4
NORTH					
Softwood:					
Loblolly pine	284.4	124.9	124.4	35.1	..
Shortleaf pine	748.1	422.2	235.3	79.4	11.2
Other softwood	75.5	15.0	10.5	18.1	31.9
Total	1,108.0	562.1	370.2	132.6	43.1
Hardwood:					
Red oaks	846.4	186.8	436.9	138.3	84.4
White oaks	628.3	159.8	311.0	110.0	47.5
Sweetgum	524.6	132.5	308.4	83.7	..
Black and tupelo gums	83.0	33.7	32.4	9.0	7.9
Other hardwood	741.1	164.9	401.3	148.9	26.0
Total	2,823.4	677.7	1,490.0	489.9	165.8
All species	3,931.4	1,239.8	1,860.2	622.5	208.9
CENTRAL					
Softwood:					
Loblolly pine	4,064.5	1,539.8	1,836.8	592.1	95.8
Shortleaf pine	1,618.7	906.7	582.2	97.7	32.1
Longleaf pine	280.2	106.7	129.0	36.6	7.9
Slash pine	9.4	..	..	9.4	..
Other pine	206.4	67.9	104.5	34.0	..
Other softwood	144.2	36.0	62.5	13.4	32.3
Total	6,323.4	2,657.1	2,715.0	783.2	168.1

Table 34.--Sawlog volume by species and tree diameter, by Survey region, 1946-48 (Cont'd.)

Species	All diameter classes	10-12 inches ^{1/}	14-18 inches	20-24 inches	26 inches and up
----- Million board feet -----					
CENTRAL (Cont'd.)					
Hardwood:					
Red oaks	1,974.4	288.7	923.2	451.4	311.1
White oaks	1,078.5	239.8	567.3	211.9	59.5
Sweetgum	1,716.0	359.6	1,019.5	278.0	58.9
Black and tupelo gums	487.6	104.7	265.9	92.2	24.8
Other hardwood	2,433.9	359.5	1,149.8	658.3	266.3
Total	7,690.4	1,352.3	3,925.7	1,691.8	720.6
All species	14,013.8	4,009.4	6,640.7	2,475.0	888.7
SOUTH					
Softwood:					
Loblolly pine	1,382.2	492.6	766.9	112.8	9.9
Shortleaf pine	372.2	227.9	123.4	20.9	..
Longleaf pine	1,151.3	647.8	481.4	4.4	17.7
Slash pine	1,147.8	550.7	497.7	99.4	..
Other pine	247.9	70.3	153.7	23.9	..
Other softwood	37.1	9.3	10.9	16.9	..
Total	4,338.5	1,998.6	2,034.0	278.3	27.6
Hardwood:					
Red oaks	514.8	97.1	226.6	112.3	78.8
White oaks	224.0	55.1	114.1	54.8	..
Sweetgum	271.1	56.9	164.5	42.9	6.8
Black and tupelo gums	480.0	98.9	286.8	56.1	38.2
Other hardwood	641.6	99.5	375.4	121.4	45.3
Total	2,131.5	407.5	1,167.4	387.5	169.1
All species	6,470.0	2,406.1	3,201.4	665.8	196.7
DELTA					
Softwood:					
Loblolly pine	3.6	0.5	3.1	..	..
Shortleaf pine	46.4	22.4	17.9	6.1	..
Other softwood	559.2	35.8	160.7	91.3	271.4
Total	609.2	58.7	181.7	97.4	271.4
Hardwood:					
Red oaks	887.6	92.3	350.2	255.3	189.8
White oaks	595.0	47.1	196.1	166.2	185.6
Sweetgum	601.0	89.3	331.7	110.0	70.0
Black and tupelo gums	211.5	31.8	101.6	78.1	..
Other hardwood	2,008.5	264.0	971.3	551.9	221.3
Total	4,303.6	524.5	1,950.9	1,161.5	666.7
All species	4,912.8	583.2	2,132.6	1,258.9	938.1

^{1/} Hardwood sawlog volume not tallied in trees under 11.0 inches d.b.h.

Table 35.--Sawlog volume by species and stand size, by Survey region, 1946-48

Species	All stand sizes	Large saw timber	Small saw timber	Cordwood	Seedling and sapling	Restock- and denuded
----- Million board feet -----						
STATE						
Softwood:						
Loblolly pine	5,734.7	1,068.1	4,001.0	596.7	47.2	21.7
Shortleaf pine	2,785.4	376.6	1,816.6	537.9	39.2	15.1
Longleaf pine	1,431.5	130.2	897.3	302.4	45.2	56.4
Slash pine	1,157.2	42.6	813.3	254.3	31.2	15.8
Other pine	454.3	106.6	329.2	18.5	..	..
Other softwood	816.0	263.4	462.9	48.6	23.8	17.3
Total	12,379.1	1,987.5	8,320.3	1,758.4	186.6	126.3
Hardwood:						
Red oaks	4,223.2	1,397.1	1,882.5	803.4	93.4	46.8
White oaks	2,525.8	657.4	1,226.7	563.5	52.8	25.4
Sweetgum	3,112.7	880.7	1,749.9	408.8	64.6	8.7
Black and tupelo gums	1,262.1	299.5	738.0	168.6	37.4	18.6
Other hardwood	5,825.1	1,788.5	2,975.4	818.9	149.6	92.7
Total	16,948.9	5,023.2	8,572.5	2,763.2	397.8	192.2
All species	29,328.0	7,010.7	16,892.8	4,521.6	584.4	318.5
NORTH						
Softwood:						
Loblolly pine	284.4	49.5	150.8	81.7	2.0	.4
Shortleaf pine	748.1	86.3	405.8	235.4	18.5	2.1
Other softwood	75.5	5.8	56.6	12.3	.5	.3
Total	1,108.0	141.6	613.2	329.4	21.0	2.8
Hardwood:						
Red oaks	846.4	192.8	353.6	288.2	11.8	..
White oaks	628.3	106.4	276.4	232.0	8.4	5.1
Sweetgum	524.6	121.2	270.2	126.2	6.7	.3
Black and tupelo gums	83.0	15.8	28.1	33.2	5.1	.8
Other hardwood	741.1	129.6	329.7	233.8	41.1	6.9
Total	2,823.4	565.8	1,258.0	913.4	73.1	13.1
All species	3,931.4	707.4	1,871.2	1,242.8	94.1	15.9
CENTRAL						
Softwood:						
Loblolly pine	4,064.5	884.4	2,827.9	306.4	33.3	12.5
Shortleaf pine	1,618.7	253.9	1,121.6	221.8	13.1	8.3
Longleaf pine	280.2	76.4	156.5	38.8	8.1	.4
Slash pine	9.4	..	9.4	..	..	..
Other pine	206.4	80.2	118.6	7.6	..	..
Other softwood	144.2	57.6	83.1	3.2	..	.3
Total	6,323.4	1,352.5	4,317.1	577.8	54.5	21.5

Table 35. --Sawlog volume by species and stand size, by Survey region, 1946-48 (Cont'd.)

Species	All stand sizes	Large saw timber	Small saw timber	Cordwood	Seedling and sapling	Restocking and denuded
----- Million board feet -----						
CENTRAL (Cont'd.)						
Hardwood:						
Red oaks	1,974.4	859.6	873.4	220.5	16.5	4.4
White oaks	1,078.5	362.9	553.7	148.6	10.7	2.6
Sweetgum	1,716.0	550.6	950.5	175.4	34.9	4.6
Black and tupelo gums	487.6	165.3	251.8	62.3	6.1	2.1
Other hardwood	2,433.9	1,083.0	1,119.7	210.3	16.4	4.5
Total	7,690.4	3,021.4	3,749.1	817.1	84.6	18.2
All species	14,013.8	4,373.9	8,066.2	1,394.9	139.1	39.7
SOUTH						
Softwood:						
Loblolly pine	1,382.2	134.2	1,020.3	207.0	11.9	8.8
Shortleaf pine	372.2	28.5	258.6	72.8	7.6	4.7
Longleaf pine	1,151.3	53.8	740.8	263.6	37.1	56.0
Slash pine	1,147.8	42.6	803.9	254.3	31.2	15.8
Other pine	247.9	26.4	210.6	10.9	..	..
Other softwood	37.1	.2	3.7	16.5	..	16.7
Total	4,338.5	285.7	3,037.9	825.1	87.8	102.0
Hardwood:						
Red oaks	514.8	84.1	232.5	157.1	16.1	25.0
White oaks	224.0	42.3	99.1	79.4	3.2	..
Sweetgum	271.1	72.5	145.8	45.7	3.3	3.8
Black and tupelo gums	480.0	32.5	354.9	59.2	21.0	12.4
Other hardwood	641.6	104.9	370.6	128.8	18.6	18.7
Total	2,131.5	336.3	1,202.9	470.2	62.2	59.9
All species	6,470.0	622.0	4,240.8	1,295.3	150.0	161.9
DELTA						
Softwood:						
Loblolly pine	3.6	..	2.0	1.6	..	..
Shortleaf pine	46.4	7.9	30.6	7.9	..	..
Other softwood	559.2	199.8	319.5	16.6	23.3	..
Total	609.2	207.7	352.1	26.1	23.3	..
Hardwood:						
Red oaks	887.6	260.6	423.0	137.6	49.0	17.4
White oaks	595.0	145.8	297.5	103.5	30.5	17.7
Sweetgum	601.0	136.4	383.4	61.5	19.7	..
Black and tupelo gums	211.5	85.9	103.2	13.9	5.2	3.3
Other hardwood	2,008.5	471.0	1,155.4	246.0	73.5	62.6
Total	4,303.6	1,099.7	2,362.5	562.5	177.9	101.0
All species	4,912.8	1,307.4	2,714.6	588.6	201.2	101.0

Table 36.--Sawlog volume by species group and class of ownership, 1946-48

Ownership	All species	Softwood	Hardwood
- - - - Million board feet - - - -			
Private:			
Cotton, general and cotton-vegetable farmer	6,236.1	2,260.8	3,975.3
Other farmer	4,387.5	1,515.3	2,872.2
Businessman, housewife, wage earner, and professional worker	8,470.2	3,290.6	5,179.6
Lumber company	2,899.7	1,447.8	1,451.9
Pulp company	1,430.4	963.3	467.1
Other forest industry	1,099.4	448.2	651.2
Real estate company and land speculator	219.3	76.9	142.4
Miscellaneous	464.5	187.3	277.2
Total private	25,207.1	10,190.2	15,016.9
Public:			
National forest	2,602.8	1,758.1	844.7
County	945.5	175.4	770.1
Other public	572.6	255.4	317.2
Total public	4,120.9	2,188.9	1,932.0
All ownership	29,328.0	12,379.1	16,948.9

Table 37.--Sawlog volume by stand size and class of ownership, 1946-48

Ownership	All stand sizes	Saw timber	Cordwood	Other
- - - - Million board feet - - - -				
Private:				
Cotton, general, and cotton-vegetable farmer	6,236.1	4,736.8	1,331.4	167.9
Other farmer	4,387.5	3,570.5	629.0	188.0
Businessman, housewife, wage earner, and professional worker	8,470.2	6,681.4	1,493.5	295.3
Lumber company	2,899.7	2,537.2	260.1	102.4
Pulp company	1,430.4	1,284.2	126.8	19.4
Other forest industry	1,099.4	909.8	165.2	24.4
Real estate company and land speculator	219.3	197.7	18.1	3.5
Miscellaneous	464.5	336.7	101.9	25.9
Total private	25,207.1	20,254.3	4,126.0	826.8
Public:				
National forest	2,602.8	2,312.3	250.0	40.5
County	945.5	856.4	62.0	27.1
Other public	572.6	480.5	83.6	8.5
Total public	4,120.9	3,649.2	395.6	76.1
All ownership	29,328.0	23,903.5	4,521.6	902.9

Table 38.--Average sawlog volume per acre by stand size and forest type, 1946-48

Forest type	All stand sizes	Large saw timber	Small saw timber	Cordwood	Seedling and sapling	Restocking and denuded
----- Board feet -----						
Softwood:						
Loblolly-shortleaf pine	2,013	4,266	4,292	659	200	104
Longleaf-slash pine	1,143	5,024	3,977	699	237	95
Cedar	166	..	..	483	167	..
Total	1,742	4,306	4,226	669	212	95
Hardwood:						
Bottomland hardwood	2,503	4,276	4,384	914	443	383
Upland hardwood	1,497	3,235	2,801	880	245	121
Upland hardwood-pine	1,333	4,872	3,144	574	170	110
Total	1,805	4,168	3,689	735	294	263
All types	1,776	4,207	3,948	706	259	168

Table 39.--Average sawlog volume per acre by Survey region and forest type, 1946-48

Forest type	State	North	Central	South	Delta
----- Board feet -----					
Softwood:					
Loblolly-shortleaf pine	2,013	1,021	2,252	2,307	1,219
Longleaf-slash pine	1,143	..	1,773	1,102	..
Cedar	166	(1/)	(1/)	..	(1/)
Total	1,742	1,003	2,223	1,454	969
Hardwood:					
Bottomland hardwood	2,503	1,591	3,445	2,337	2,456
Upland hardwood	1,497	971	2,457	328	2,663
Upland hardwood-pine	1,333	934	2,013	843	1,518
Total	1,805	1,079	2,478	1,218	2,450
All types	1,776	1,058	2,333	1,363	2,408

1/ Sample too small to permit regional breakdown.

Table 40. --Sawlog volume by softwood tree grade, hardwood log grade, and stand quality, by Survey region, 1946-48

Species group	All grades	Grade 1	Grade 2	Grade 3	
				In fair and better stands	In poor stands
----- Million board feet -----					
STATE					
Softwood	12,379.1	1,553.8	3,205.9	2,196.4	5,423.0
Hardwood	16,948.9	1,811.8	3,888.8	7,110.2	4,138.1
Total	29,328.0	3,365.6	7,094.7	9,306.6	9,561.1
NORTH					
Softwood	1,108.0	147.4	281.4	57.1	622.1
Hardwood	2,823.4	248.5	649.4	1,022.4	903.1
Total	3,931.4	395.9	930.8	1,079.5	1,525.2
CENTRAL					
Softwood	6,323.4	992.8	1,770.6	1,174.8	2,385.2
Hardwood	7,690.4	907.5	1,615.0	3,550.3	1,617.6
Total	14,013.8	1,900.3	3,385.6	4,725.1	4,002.8
SOUTH					
Softwood	4,338.5	321.0	1,002.2	802.1	2,213.2
Hardwood	2,131.5	268.5	483.9	816.5	562.6
Total	6,470.0	589.5	1,486.1	1,618.6	2,775.8
DELTA					
Softwood	609.2	92.6	151.7	162.4	202.5
Hardwood	4,303.6	387.3	1,140.5	1,721.0	1,054.8
Total	4,912.8	479.9	1,292.2	1,883.4	1,257.3

Table 41.--Current annual drain of sawlog and total growing stock in species groups, by commodity and Survey region, 1946

Commodity	Total growing stock			Sawlog growing stock		
	All species	Soft-wood	Hard-wood	All species	Soft-wood	Hard-wood
	Million cubic feet			Million board feet		
				STATE		
Sawlogs	283.4	163.0	120.4	1,574.9	851.2	723.7
Fuel wood	81.4	11.4	70.0	250.9	44.2	206.7
Pulpwood	79.4	64.2	15.2	126.9	102.8	24.1
Hewn ties	26.2	11.4	14.8	150.5	57.4	93.1
Cooperage bolts	19.2	.5	18.7	124.6	2.8	121.8
Veneer logs	19.1	2.3	16.8	128.0	13.1	114.9
Poles	13.1	13.1	..	61.6	61.6	..
Fence posts	5.5	.2	5.3	17.0	.1	16.9
Piling	.6	.6	..	2.7	2.7	..
Misc. products	7.7	.2	7.5	40.8	.8	40.0
Misc. domestic use	18.0	2.7	15.3	58.6	5.8	52.8
Total	553.6	269.6	284.0	2,536.5	1,142.5	1,394.0
				NORTH		
Sawlogs	56.2	26.2	30.0	316.8	136.8	180.0
Fuel wood	28.0	1.2	26.8	83.8	4.8	79.0
Pulpwood	3.6	2.4	1.2	5.8	3.9	1.9
Hewn ties	3.0	.8	2.2	17.6	4.0	13.6
Cooperage bolts	4.8	(1/)	4.8	31.3	..	31.3
Veneer logs	.1	(1/)	.1	.8	(1/)	.8
Poles	.1	.1	..	.6	.6	..
Fence posts	2.0	..	2.0	6.5	..	6.5
Misc. products	3.2	(1/)	3.2	17.1	(1/)	17.1
Misc. domestic use	4.6	1.1	3.5	10.8	1.7	9.1
Total	105.6	31.8	73.8	491.1	151.8	339.3
				CENTRAL		
Sawlogs	161.3	101.3	60.0	890.0	528.9	361.1
Fuel wood	29.6	7.7	21.9	94.4	29.4	65.0
Pulpwood	42.6	35.0	7.6	68.1	56.1	12.0
Hewn ties	14.5	6.4	8.1	83.1	32.0	51.1
Cooperage bolts	7.4	(1/)	7.4	48.1	(1/)	48.1
Veneer logs	9.4	1.0	8.4	63.4	5.8	57.6
Poles	6.4	6.4	..	30.2	30.2	..
Fence posts	2.1	.1	2.0	6.4	(1/)	6.4
Piling	.5	.5	..	2.3	2.3	..
Misc. products	2.5	.1	2.4	13.3	.4	12.9
Misc. domestic use	4.4	.8	3.6	12.8	1.9	10.9
Total	280.7	159.3	121.4	1,312.1	687.0	625.1

Table 41.--Current annual drain of sawlog and total growing stock in species groups, by commodity and Survey region, 1946 (Cont'd.)

Commodity	Total growing stock			Sawlog growing stock		
	All	Soft-	Hard-	All	Soft-	Hard-
	species	wood	wood	species	wood	wood
	Million cubic feet			Million board feet		
SOUTH						
Sawlogs	44.7	32.5	12.2	243.2	169.9	73.3
Fuel wood	5.6	1.4	4.2	18.0	5.6	12.4
Pulpwood	30.6	25.9	4.7	48.9	41.4	7.5
Hewn ties	8.6	4.2	4.4	49.0	21.1	27.9
Cooperage bolts	.5	.4	.1	2.8	2.2	.6
Veneer logs	6.4	1.2	5.2	42.2	6.7	35.5
Poles	6.6	6.6	..	30.8	30.8	..
Fence posts	.7	.1	.6	2.0	.1	1.9
Piling	.1	.1	..	.4	.4	..
Misc. products	.7	.1	.6	3.8	.4	3.4
Misc. domestic use	2.1	.8	1.3	5.7	2.2	3.5
Total	106.6	73.3	33.3	446.8	280.8	166.0
DELTA						
Sawlogs	21.2	3.0	18.2	124.9	15.6	109.3
Fuel wood	18.2	1.1	17.1	54.7	4.4	50.3
Pulpwood	2.6	.9	1.7	4.1	1.4	2.7
Hewn ties	.1	(1/)	.1	.8	.3	.5
Cooperage bolts	6.5	.1	6.4	42.4	.6	41.8
Veneer logs	3.2	.1	3.1	21.6	.6	21.0
Fence posts	.7	(1/)	.7	2.1	(1/)	2.1
Misc. products	1.3	(1/)	1.3	6.6	(1/)	6.6
Misc. domestic use	6.9	(1/)	6.9	29.3	(1/)	29.3
Total	60.7	5.2	55.5	286.5	22.9	263.6

1/ Negligible

Table 42.--Current annual drain of sawlog and total growing stock by species, 1946

Species	Total growing stock	Sawlog growing stock
	<u>Million cubic feet</u>	<u>Million board feet</u>
Softwood:		
Pines	267.5	1,132.0
Other	2.1	10.5
Total	<u>269.6</u>	<u>1,142.5</u>
Hardwood:		
Oaks	113.2	520.2
Sweetgum	61.0	309.5
Black and tupelo gums	38.3	215.8
Other	71.5	348.5
Total	<u>284.0</u>	<u>1,394.0</u>
All species	553.6	2,536.5

Table 43.—Current annual drain of sawlog and total growing stock, by species group and class of timber, by Survey region, 1946

Class of timber	Total growing stock			Sawlog growing stock		
	All species	Soft-wood	Hard-wood	All species	Soft-wood	Hard-wood
	Million cubic feet			Million board feet		
STATE						
Sawlog trees	435.2	218.6	216.6	2,536.5	1,142.5	1,394.0
Cordwood trees	118.4	51.0	67.4	..	..	..
Total	553.6	269.6	284.0	2,536.5	1,142.5	1,394.0
NORTH						
Sawlog trees	81.4	28.3	53.1	491.1	151.8	339.3
Cordwood trees	24.2	3.5	20.7	..	..	..
Total	105.6	31.8	73.8	491.1	151.8	339.3
CENTRAL						
Sawlog trees	227.9	130.9	97.0	1,312.1	687.0	625.1
Cordwood trees	52.8	28.4	24.4	..	..	..
Total	280.7	159.3	121.4	1,312.1	687.0	625.1
SOUTH						
Sawlog trees	80.7	55.3	25.4	446.8	280.8	166.0
Cordwood trees	25.9	18.0	7.9	..	..	..
Total	106.6	73.3	33.3	446.8	280.8	166.0
DELTA						
Sawlog trees	45.2	4.1	41.1	286.5	22.9	263.6
Cordwood trees	15.5	1.1	14.4	..	..	..
Total	60.7	5.2	55.5	286.5	22.9	263.6

Table 44. --Current annual drain of sawlog and total growing stock in species groups, by county, 1946

County	Total growing stock			Sawlog growing stock		
	All species	Soft-wood	Hard-wood	All species	Soft-wood	Hard-wood
	Million cubic feet			Million board feet		
Adams	11.3	2.4	8.9	63.4	11.2	52.2
Alcorn	3.6	1.0	2.6	16.6	4.9	11.7
Amite	13.4	10.8	2.6	65.9	53.3	12.6
Attala	9.0	4.9	4.1	40.2	19.9	20.3
Benton	2.0	.5	1.5	9.6	2.5	7.1
Bolivar	8.9	(1/)	8.9	43.7	.2	43.5
Calhoun	5.0	1.6	3.4	24.4	8.6	15.8
Carroll	4.2	1.8	2.4	19.5	9.0	10.5
Chickasaw	4.0	1.1	2.9	18.4	5.1	13.3
Choctaw	5.6	2.6	3.0	22.9	10.4	12.5
Claiborne	7.5	2.3	5.2	40.8	10.2	30.6
Clarke	15.6	9.5	6.1	78.8	44.9	33.9
Clay	2.3	.5	1.8	10.7	2.2	8.5
Coahoma	3.4	(1/)	3.4	15.1	.1	15.0
Copiah	14.3	8.1	6.2	65.7	34.8	30.9
Covington	6.9	4.4	2.5	31.3	18.8	12.5
DeSoto	2.7	.2	2.5	10.4	.3	10.1
Forrest	4.7	3.5	1.2	16.7	12.0	4.7
Franklin	12.0	9.0	3.0	54.5	39.7	14.8
George	4.2	3.3	.9	17.7	13.3	4.4
Greene	6.7	5.1	1.6	30.0	21.3	8.7
Grenada	4.1	1.1	3.0	21.3	5.8	15.5
Hancock	4.4	3.5	.9	15.6	10.8	4.8
Harrison	3.7	3.2	.5	14.7	13.3	1.4
Hinds	9.4	3.7	5.7	42.2	14.6	27.6
Holmes	7.3	1.7	5.6	33.9	5.0	28.9
Humphreys	2.4	(1/)	2.4	9.6	.1	9.5
Issaquena	2.1	(1/)	2.1	10.6	(1/)	10.6
Itawamba	7.0	2.9	4.1	35.8	15.3	20.5
Jackson	6.5	5.2	1.3	23.9	16.0	7.9
Jasper	13.5	7.9	5.6	62.0	32.2	29.8
Jefferson	7.8	3.4	4.4	38.5	14.6	23.9
Jeff Davis	5.8	3.5	2.3	27.4	14.6	12.8
Jones	9.6	5.6	4.0	42.0	22.8	19.2
Kemper	11.2	6.3	4.9	56.0	29.7	26.3
Lafayette	3.5	0.8	2.7	16.5	3.8	12.7
Lamar	7.1	5.0	2.1	30.6	19.9	10.7
Lauderdale	14.0	8.1	5.9	68.5	36.7	31.8
Lawrence	9.0	6.1	2.9	40.0	24.6	15.4
Leake	11.6	7.5	4.1	49.6	30.4	19.2
Lee	2.8	.4	2.4	11.1	1.8	9.3
LeFlore	2.6	.1	2.5	10.4	.3	10.1

Table 44. --Current annual drain of sawlog and total growing stock in species groups, by county, 1946 (Cont'd.)

County	Total growing stock			Sawlog growing stock		
	All species	Soft-wood	Hard-wood	All species	Soft-wood	Hard-wood
	Million cubic feet			Million board feet		
Lincoln	13.0	8.8	4.2	56.3	36.8	19.5
Lowndes	4.8	1.6	3.2	23.2	7.6	15.6
Madison	7.8	3.1	4.7	37.3	14.4	22.9
Marion	8.2	5.0	3.2	31.6	15.9	15.7
Marshall	3.5	.7	2.8	15.4	3.0	12.4
Monroe	8.2	3.3	4.9	41.2	16.7	24.5
Montgomery	3.5	1.6	1.9	15.7	7.0	8.7
Neshoba	8.4	4.1	4.3	41.3	18.5	22.8
Newton	12.7	7.6	5.1	55.4	30.1	25.3
Noxubee	3.9	1.3	2.6	17.6	5.9	11.7
Oktibbeha	4.2	1.6	2.6	19.0	7.5	11.5
Panola	4.2	.3	3.9	17.7	1.2	16.5
Pearl River	6.0	3.8	2.2	23.6	13.6	10.0
Perry	5.6	3.4	2.2	18.4	9.3	9.1
Pike	9.4	6.1	3.3	39.2	24.3	14.9
Pontotoc	3.4	.9	2.5	15.2	4.6	10.6
Prentiss	4.9	1.3	3.6	24.4	6.5	17.9
Quitman	1.7	.1	1.6	6.7	.4	6.3
Rankin	16.9	10.0	6.9	71.9	38.0	33.9
Scott	13.1	8.4	4.7	55.8	33.1	22.7
Sharkey	2.6	.1	2.5	13.6	.8	12.8
Simpson	12.5	7.5	5.0	52.6	28.2	24.4
Smith	10.5	5.5	5.0	49.1	24.7	24.4
Stone	3.6	3.1	.5	15.9	13.2	2.7
Sunflower	2.8	(1/)	2.8	9.2	.1	9.1
Tallahatchie	2.9	.5	2.4	12.2	2.5	9.7
Tate	1.7	.1	1.6	6.2	.3	5.9
Tippah	3.7	.9	2.8	17.0	4.4	12.6
Tishomingo	5.9	2.1	3.8	27.2	10.1	17.1
Tunica	3.0	.1	2.9	12.9	.7	12.2
Union	3.1	.5	2.6	15.1	2.6	12.5
Walthall	3.8	2.3	1.5	15.5	8.0	7.5
Warren	7.3	1.7	5.6	41.3	8.4	32.9
Washington	4.3	(1/)	4.3	16.6	.2	16.4
Wayne	10.8	7.3	3.5	51.9	33.4	18.5
Webster	3.3	1.5	1.8	14.2	6.6	7.6
Wilkinson	14.8	9.4	5.4	74.2	43.9	30.3
Winston	7.1	3.6	3.5	35.3	16.9	18.4
Yalobusha	4.4	.9	3.5	22.4	4.0	18.4
Yazoo	9.4	.9	8.5	50.7	4.1	46.6
Total	553.6	269.6	284.0	2,536.5	1,142.5	1,394.0

Table 45. --Current annual net growth of sawlog and total growing stock
by species group and class of timber, by Survey region.
1946-48

Class of timber	Total growing stock			Sawlog growing stock		
	All species	Soft- wood	Hard- wood	All species	Soft- wood	Hard- wood
	Million cubic feet			Million board feet		
STATE						
Sawlog trees	256.0	151.5	104.5	1,816.5	901.1	915.4
Cordwood trees	272.7	41.3	231.4	..	..	..
Total	528.7	192.8	335.9	1,816.5	901.1	915.4
NORTH						
Sawlog trees	32.0	14.5	17.5	231.2	86.7	144.5
Cordwood trees	73.9	8.4	65.5	..	..	..
Total	105.9	22.9	83.0	231.2	86.7	144.5
CENTRAL						
Sawlog trees	130.7	84.8	45.9	933.7	504.5	429.2
Cordwood trees	134.9	24.2	110.7	..	..	..
Total	265.6	109.0	156.6	933.7	504.5	429.2
SOUTH						
Sawlog trees	60.6	49.1	11.5	401.5	292.9	108.6
Cordwood trees	28.6	8.3	20.3	..	..	..
Total	89.2	57.4	31.8	401.5	292.9	108.6
DELTA						
Sawlog trees	32.7	3.1	29.6	250.1	17.0	233.1
Cordwood trees	35.3	0.4	34.9	..	..	..
Total	68.0	3.5	64.5	250.1	17.0	233.1

Table 46.--Current annual net growth per acre of sawlog and total growing stock, by forest-type and stand-size group, by Survey region, 1946-48

Stand-size group	Total growing stock			Sawlog growing stock		
	All types	Softwood types	Hardwood types	All types	Softwood types	Hardwood types
	Cubic feet			Board feet		
STATE						
Saw timber	46	58	37	201	251	164
Cordwood	29	32	27	82	104	65
Other stand sizes	17	14	19	22	25	20
Total	32	36	29	110	132	92
NORTH						
Saw timber	37	40	36	132	169	120
Cordwood	28	28	28	52	73	44
Other stand sizes	22	18	24	13	16	12
Total	28	28	29	62	79	56
CENTRAL						
Saw timber	54	66	40	226	270	179
Cordwood	39	43	33	113	130	92
Other stand sizes	26	23	34	28	31	19
Total	44	49	37	155	172	133
SOUTH						
Saw timber	37	45	23	200	236	133
Cordwood	19	22	13	77	95	46
Other stand sizes	7	8	7	19	23	13
Total	19	23	13	85	105	52
DELTA						
Saw timber	38	41	38	185	179	185
Cordwood	33	35	32	99	100	99
Other stand sizes	26	13	26	39	49	38
Total	33	33	33	123	110	123

Definition of Terms

Forest Land

Forest land. Land which bears forest growth, or land from which the forest has been removed and which has not been put to other use. Each tract classed as forest is at least one acre in size.

Commercial forest land. Forest land bearing, or capable of bearing, timber of commercial quantity and quality, and not withdrawn from commercial timber use.

Reserved-commercial forest land. Forest land in public parks or preserves which qualifies as commercial forest land except that it is withdrawn from commercial timber use.

Tree Species

Softwoods. Pine, eastern redcedar, and cypress.

Hardwoods. Any broadleaved species.

Forest Type

Forest type is determined only from dominant and codominant growing stock and dominant and codominant smaller sound trees of good form.

Loblolly-shortleaf pine. Stands in which pines comprise at least 25 percent of the trees, and at least half of the pines are loblolly and shortleaf pines.

Longleaf-slash pine. Stands in which pines comprise at least 25 percent of the trees, and at least half of the pines are longleaf and slash pines.

Cedar. Stands in which eastern redcedar comprises at least 25 percent of the trees.

Bottomland hardwood. Stands in which bottomland hardwoods and cypress comprise 76 percent or more of the trees.

Upland hardwood Stands in which upland hardwoods comprise 76 percent or more of the trees, and no pine is present.

Upland hardwood-pine. Stands in which upland hardwoods comprise 76 percent or more of the trees, and some pine is present.

Class of Timber

Growing stock. Sawlog growing stock is the sawlog portion of sawlog trees. Total growing stock includes sawlog growing stock, and upper stems of softwood sawlog trees and entire stems of cordwood trees to a minimum diameter of 4 inches inside bark.

Sawlog tree. A live, merchantable softwood 9.0 inches or larger in d.b.h., or a live, merchantable hardwood 11.0 inches or larger in d.b.h. To be merchantable, the tree must have at least a merchantable 12-foot butt log or 50 percent of its gross volume in merchantable logs.

Cordwood tree. A live tree 5.0 inches or larger in d.b.h., but smaller than sawlog size, which would become a sawlog tree if it should grow to sawlog size.

Cull tree. A live tree 5.0 inches or larger in d.b.h., which because of decay or sound defect fails to meet the specifications for a cordwood or sawlog tree.

Tops and limbs. Upper stems and limbs of hardwood sawlog trees between the top sawlog and a minimum diameter of 4 inches inside bark.

Stand-size Class

Large saw timber. Stands having a net volume of at least 1,500 board feet per acre in sawlog trees and at least half of this volume in softwoods 15.0 inches d.b.h. and larger, and hardwoods 17.0 inches d.b.h. and larger.

Small saw timber. Stands which do not meet the specifications for large saw timber but which do contain a net volume of at least 1,500 board feet per acre in sawlog trees.

Cordwood. Stands below saw-timber specifications, with at least 10 percent of the growing space occupied by growing stock, and with at least 5 percent of the growing space occupied by cordwood trees.

Seedling and sapling. Stands that do not meet saw-timber and cordwood specifications in which at least 40 percent of the growing space is occupied by growing stock and smaller sound trees of commercial species, but with less than 10 percent of the space occupied by growing stock.

Restocking and denuded. Commercial forest land which does not qualify for any other stand-size class.

Tree Stocking

Degree of stocking is determined by the ratio of the actual number of growing-stock and smaller sound trees of good form in the stand to the number of trees of the same size required to occupy the site fully (for best growth). Under this criterion, stands are well stocked when the percentage of full stocking is 70 or above, partially stocked when the percentage is 40 to 69, poorly stocked when the percentage is 10 to 39, and nonstocked when the percentage is under 10.

Volume and Basal Area

Sawlog volume. Net volume in merchantable sawlogs in sawlog trees, measured by the International 1/4-inch log rule.

Total volume. Volume of sound, usable wood in stems of softwoods and stems and branches of hardwoods between stump and minimum top diameter of 4 inches inside bark, measured in cubic feet.

Basal area. Cross-sectional area of trees at breast height, measured in square feet.

Diameter

D.b.h. (diameter breast high). Tree diameter in inches, outside bark, measured at $4\frac{1}{2}$ feet above ground.

Diameter class. Each 2-inch diameter class includes diameters 1.0 inch below and 0.9 inch above the stated midpoint. E.g., the 12-inch class includes trees 11.0 up to and including 12.9 inches.

Growth

Current annual net growth. A forecast of the annual increase in the reported growing stock if no cutting should take place, allowing for normal tree mortality due to suppression, fire, windthrow, and other causes.

Drain

Net volume removed from the timber growing stock through cutting of timber commodities and attendant logging waste, and through land clearing.

Log and Tree Grade

Tree grades for softwoods:

Grade 1 (smooth trees). Not less than 20 feet of clear bole and at least 40 percent of the merchantable length clear of limbs and knots in sections not less than 8 feet in length.

Grade 2 (limby trees). Not less than 12 feet of clear bole and 25 to 39 percent of the merchantable length clear of limbs and knots in sections not less than 8 feet in length.

Grade 3 (rough trees). Merchantable trees below grade-2 specifications.

Log grades for hardwoods:^{1/}

Grade 1. Smooth, generally clear logs which yield at least one-half of their volume in higher grades of lumber.

Grade 2. Logs of average clearness which yield from one-third to one-half of their volume in higher grades of lumber.

Grade 3. Small logs or logs of less than average clearness which yield less than one-third of their volume in higher grades of lumber, or sound, straight logs with many small defects which make them suitable only for ties and timbers.

Stand Quality

Fair and better. A stand in which grade 2 or better hardwood logs or softwood trees are present.

Poor. A stand in which no grade 2 hardwood logs or softwood trees are present.

^{1/} For detailed external specifications of log grades used, see "Interim Sawlog Grades for Southern Hardwoods," Southern Forest Experiment Station, 9 pp., January 1948. (Revised).